CHAPTER 4: ARE THE STATE'S AIR TRANSPORTATION FACILITIES ADEQUATE FOR SERVING WASHINGTON'S NEEDS?

This chapter is divided into the following sections in order to describe the airport classification system and its objectives:

- What is the Purpose of a Classification System for Airports?
- What Are the Airport Classifications?
- How Are Airport Service Levels Measured?
- How Might Individual Airport Roles Change Based on Forecast Demand?
- What Are the Key Findings?

What is the Purpose of a Classification System for Airports?

Airport classification systems are used to identify the role of each airport in the state system and to understand the types of facilities and services necessary at each.

Just as interstate highways serve a different purpose than arterials and local streets, different airports are designed to serve different air transportation needs. Within the air transportation system, individual airports contribute at different and varying levels and serve different roles to meet growing populations and economic demand. Determining the contribution each airport makes to the local community, region, state, and nation is an important step in evaluating how well Washington is served by its air transportation system. Once gaps in service, shortfalls in infrastructure, and deficiencies in zoning/planning tools that preserve airport viability are identified, funding resources can be allocated effectively to upgrade airports to meet these needs.

Airport classification systems are used to identify the role of each airport in the state system and to understand the types of facilities and services necessary at each. The FAA has a classification system for the 66 Washington airports included in the National Plan of Integrated Airport Systems (NPIAS), and the state has developed a complementary classification system to address all the public use airports.

State airport classifications do not supersede FAA classifications, but supplement them by including airports that are not deemed nationally significant and by further subdividing the largest FAA classification--general aviation airports. General aviation airports include airports in small towns that are home to a handful of piston aircraft, busy airports in urban areas used by business jets, and the full range of airports between those extremes, including airports with water landing areas.

The state airport classification system guides the facilities and services assessment required by the LATS legislation. The state airport classification system guides the facilities and services assessment required by the LATS legislation. The state classification system:

- Identifies roles of airport facilities within the state system.
- Uses population, facilities and driving time to measure access to the state air transportation system.
- Allows measuring of system performance by facility and service objectives.
- Identifies needs significant to the system, which help prioritize investment.

The evaluation of performance objectives that are tied to the state airport classification system determines the **type** of aviation that the airport system needs to serve, instead of the **amount** of aviation activity that the airport system needs to serve, which is the aim of capacity analyses.

The Phase I report proposed state airport classifications and performance criteria that were compared to existing airports to evaluate current conditions. The classification system and the criteria for assessing system performance have changed since Phase I, based on the results of the Phase I analysis and review by airport system stakeholders. Detailed analysis about the state classification system and performance objectives, including changes from the proposals in Phase I, are in *Technical Memorandum Number One - Airport Classification and Evaluation Criteria.*

What Are the Airport Classifications?

In 2003 through 2005, WSDOT Aviation developed draft Washington State Airport Classifications in consultation with several statewide, interjurisdictional working groups. As LATS began, a proposed framework existed for classifications and the facilities and services required for each classification to function adequately. Access, airport facilities, airport services, expansion and preservation capabilities, and economic opportunities had been analyzed to help determine the role of an airport within the state system. The classification system underwent further refinement during Phase I of LATS.

The major factor in determining the classifications finalized in Phase II of LATS was access. Access is typically associated with providing air transportation for the movement of people and goods, and providing reasonable access times to the state's population, employment centers and remote or isolated communities. Population, population density, primary

road access, and based aircraft were factors in determining coverage and access to the aviation system. Airport classifications were assigned to Washington's public use airports by analyzing levels of access appropriate for the populations served and driving time. Minimum threshold criteria were defined for each classification based on their intended function. These criteria include runway length, based aircraft, or special characteristics such as scheduled passenger service or water landing areas.

The major factor in determining the classifications finalized in Phase II of LATS was access. Access is typically associated with providing air transportation for the movement of people and goods, and providing reasonable access times to the state's population, employment centers and remote or isolated communities.

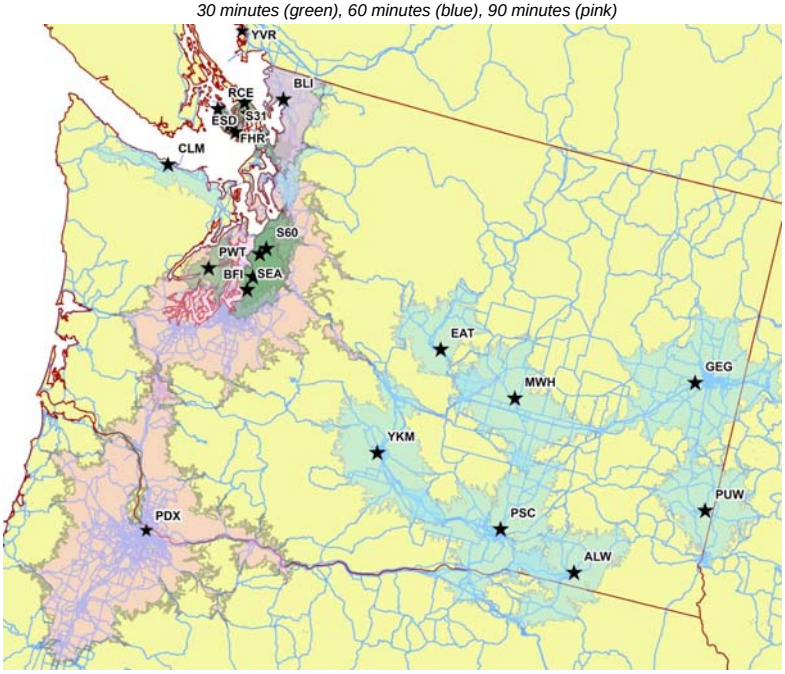
Six classifications identify the roles and service levels of Washington's public use airports:

- Commercial Service Airports
- Regional Service Airports
- Community Service Airports
- Local Service Airports
- Recreation or Remote Airports
- Seaplane Bases

The first two classifications, Commercial Service Airports and Regional Service Airports, have the largest service areas, in terms of driving time and population. Airports in both classifications accommodate high levels of activity and are typically capable of handling high performance aircraft (regional/corporate jets and turboprops).

Figure 15: Ninety-Four Percent of Washington State's Population is Within Reasonable Access of a Commercial Service Airport

Commercial Airport Drive Times
30 minutes (green), 60 minutes (blue), 90 minutes (pink)



Catchment Area Populations
In Thousands, 2005

Airport	Code	Service Area Population
90-minute service areas		
Seattle/Tacoma	SEA	3,902
Portland (1)	PDX	534
Vancouver (1)	YVR	249
60-minute service areas		
Spokane	GEG	563
Bellingham	BLI	345
Pasco	PSC	329
Yakima	YKM	259
Pullman/Moscow	PUW	120
Wenatchee	EAT	99
Walla Walla	ALW	89
Moses Lake	MWH	78
Port Angeles	CLM	58
30-minute service areas		
Boeing Field	BFI	1,900
Bremerton	PWT	217
Anacortes	74S	61
Minor Airports/Seaplane Bases (30 minute)		
Lake Union	LKE	1,929
Kenmore Air	S60	1,779
Friday Harbor	FHR	8
Roche Harbor	RCE	6
Lopez Island	S31	3
Eastsound	ORS	2
Rosario	RSJ	2
Unduplicated Total (WA Only)		5,958
Total WA State Population		6,319
% of Population Covered		94%

The Community Service and Local Service Airports serve small-to medium-sized communities. An airport in one of these two classifications accommodates a fairly wide range of general aviation activities such as agriculture interests, business support and emergency medical transportation that are important to the community's economic well-being and quality of life.

The Recreation or Remote Airports and Seaplane Bases serve narrower scopes of general aviation. An airport in one of these two classifications typically owes its existence to geographic circumstances (e.g., a residential airpark, recreational destination, body of water, or emergency landing area in the mountains), rather than to demand from the population within its service area.

A total of 139 airports have been classified, including Columbia Gorge Regional/The Dalles, which has an Oregon sponsor, but is located in Washington. The following sections discuss each of the six airport classifications individually, describing both the criteria for the classification and the airports assigned to the classification.

Figure 16: Distribution of Airports by Classification

Classification	No. of Airports	Description
Commercial Service	16	Accommodates at least 2,500 scheduled passenger boardings per year for at least three years.
Regional Service	19	Serves large or multiple communities; all NPIAS Relievers; 40 based aircraft and 4,000-foot long runway, with exceptions
Community Service	23	Serves a community; at least 20 based aircraft; paved runway
Local Service	33	Serves a community; fewer than 20 based aircraft; paved runway
Recreation or Remote	39	Other land-based airports, including residential airparks
Seaplane Bases	9	Identified by FAA as a seaplane base, unless it is a Commercial Service Airport

Commercial Service Airports

Commercial Service Airports provide scheduled passenger air carrier and/or commuter service to in-state, domestic, and (in some cases) international destinations. Some of these airports also serve regional air cargo demand and many accommodate significant levels of general aviation. Commercial Service Airports are mostly located in large population centers. The extent of a Commercial Service Airport's service area, as defined by driving time and population, depends upon the type of air service provided. Typically, these airports are classified as *primary* or *commercial service* airports in the NPIAS.

Commercial Service Airports meet the following threshold criterion:

- Accommodate at least 2,500 scheduled passenger boardings[12] per year for at least three years.

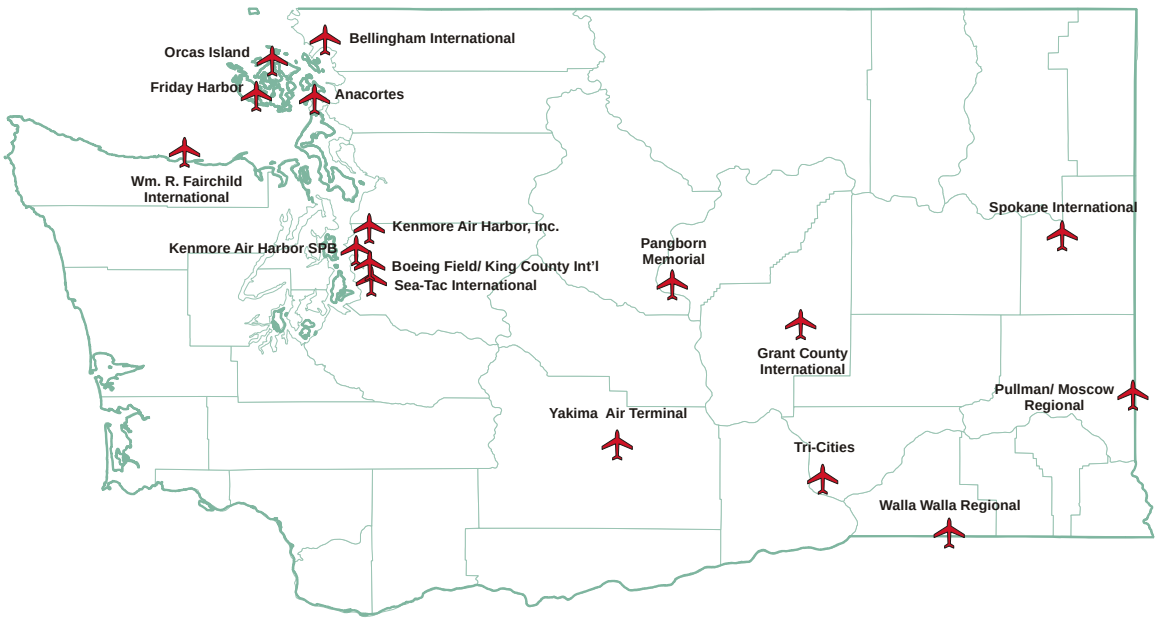
The two Kenmore Air Harbor facilities are privately owned and are not classified as primary or commercial service airports in the NPIAS. However, each has a history of more than 2,500 annual passenger boardings, so are included in the State's Commercial Service Airport classification.

[12] The source of annual passenger boarding data is the Air Carrier Activity Information System (ACAIS).

Figure 17: State Classification – Commercial Service Airports

Name	City
Anacortes	Anacortes
Bellingham International	Bellingham
Boeing Field/King County International	Seattle
Friday Harbor	Friday Harbor
Grant County International	Moses Lake
Kenmore Air Harbor SPB	Kenmore
Kenmore Air Harbor, Inc.	Seattle
Orcas Island	Eastsound
Pangborn Memorial	Wenatchee
Pullman/Moscow Regional	Pullman/Moscow
Seattle-Tacoma International	Seattle
Spokane International	Spokane
Tri-Cities	Pasco
Walla Walla Regional	Walla Walla
William R Fairchild International	Port Angeles
Yakima Air Terminal	Yakima

Figure 18: Commercial Service Airports



Regional Service Airports

Regional Service Airports could accept emergency passenger and cargo flights in large aircraft, in case Commercial Service Airports or ground transportation modes are incapacitated by natural or manmade disaster. In addition, Regional Service Airports include the airports most likely to grow into new Commercial Service Airports in the future

Regional Service Airports serve the general aviation needs of multiple communities or are located in large metropolitan areas where multiple airports are warranted. They include all airports classified as *relievers* by the NPIAS. Most Regional Service Airports accommodate unscheduled air taxi/charter flights, and some have air cargo service. Regional Service Airports can accommodate high aviation activity levels. Except for Reliever airports that are designed for small aircraft, they can accommodate nearly all types of general aviation aircraft, including corporate and air ambulance jets. Their ability to accommodate jet traffic makes them vital assets for regional economic development and quality of life.

These airports could accept emergency passenger and cargo flights in large[13] aircraft, in case Commercial Service Airports or ground transportation modes are incapacitated by natural or manmade disaster. In addition, Regional Service Airports include the airports most likely to grow into new Commercial Service Airports in the future.

WSDOT's goal is that nearly every Washington resident should be able to reach a "jet-capable" Regional Service or comparable Commercial Service Airport within 90 minutes.

Regional Service Airports typically have a 60- to 90-minute (driving time) service area, unless high population density necessitates a smaller service area. In the Seattle metropolitan area, most of the population is located less than 60 minutes from a Regional Service Airport. In other urbanized parts of the state, a Regional Service Airport draws from a service area of about 60 minutes, while Regional Service Airports in lightly populated areas draw population from as far away as 90 minutes.

WSDOT's goal for providing access to Regional Service Airports is:

Nearly every Washington resident should be able to reach a "jet-capable" Regional Service or comparable Commercial Service Airport within 90 minutes.[14]

This principle recognizes that most of the Commercial Service Airports in Washington also have the capacity for and provide the facilities and services needed for high levels of general aviation activity and for jet aircraft.

Regional Service Airports meet the following threshold criteria:

[13] Aircraft with maximum takeoff weight over 12,500 pounds

[14] For determining criteria for assigning the Regional Service classification, "jet capable" means a runway at least 4,000 feet long and a "comparable Commercial Service Airport" is one with a runway at least 4,000 feet long. Performance objectives for Regional Service and Commercial Service Airports discussed later in this chapter include objectives that enhance jet capability, such as a 5,000-foot runway length, low visibility instrument approach, and jet fuel sales.

- Have at least 40 based aircraft, unless the airport is required for coverage of lower density population areas.
- Have a runway at least 4,000 feet long, unless the airport is designated as a NPIAS Reliever.
- Be separated from another Regional Service Airport or a comparable Commercial Service Airport by at least 30 minutes driving time, unless closer airports are justified by large population numbers within the service area.
- Have a minimum service area population of approximately 5,000 (90-minute driving time) and a maximum service area population of approximately 400,000 (60-minute driving time).

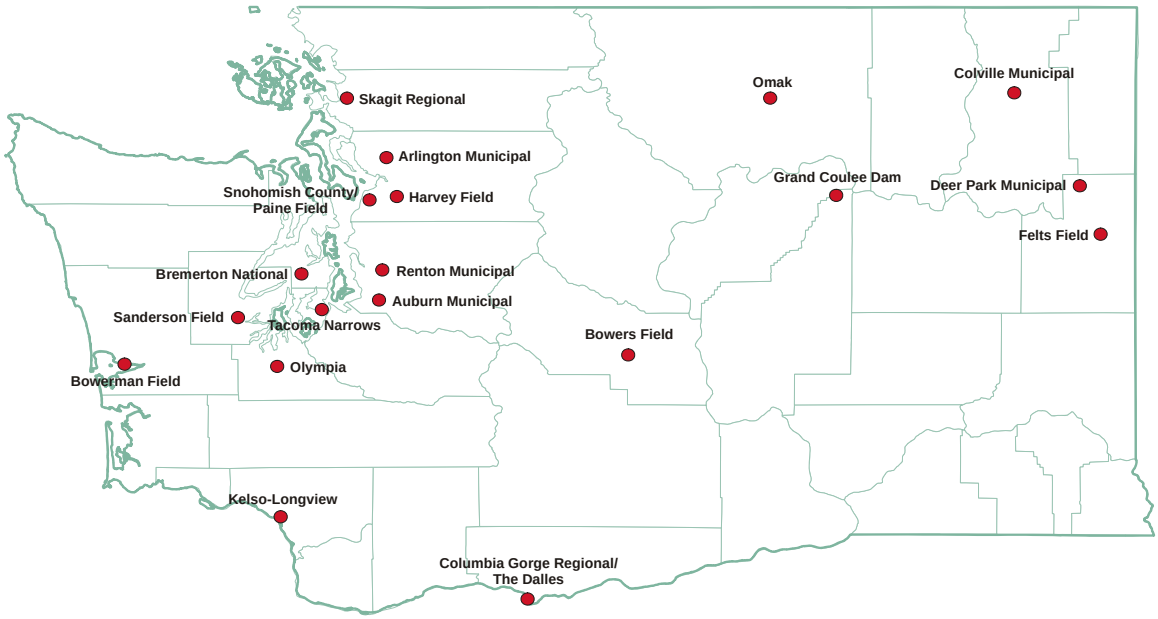
Approximately 96 percent of the population and 43 percent of the land area is within 60 minutes of the mapped airports. Within 90 minutes are 99 percent of the state's population and 69 percent of the land area.

Figure 19: State Classification – Regional Service Airports

Name	City
Arlington Municipal	Arlington
Auburn Municipal	Auburn
Bowerman Field	Hoquiam
Bowers Field	Ellensburg
Bremerton National	Bremerton
Columbia Gorge Regional/The Dalles	The Dalles
New Northeast Washington*	Colville*
Deer Park Municipal	Deer Park
Felts Field	Spokane
Grand Coulee Dam	Electric City
Harvey Field	Snohomish
Kelso-Longview	Kelso
Olympia	Olympia
Omak	Omak
Renton Municipal	Renton
Sanderson Field	Shelton
Skagit Regional	Burlington/Mount Vernon
Snohomish County/Paine Field	Everett
Tacoma Narrows	Tacoma

*Colville Municipal Airport is used to represent a new Northeast Washington Airport, although that particular airport may not be where thea new Regional Service Airport would be located. For approximately 31,000 people, a Northeast Washington airport around Colville would be the closest Regional Service Airport.

Figure 20: Regional Service Airports



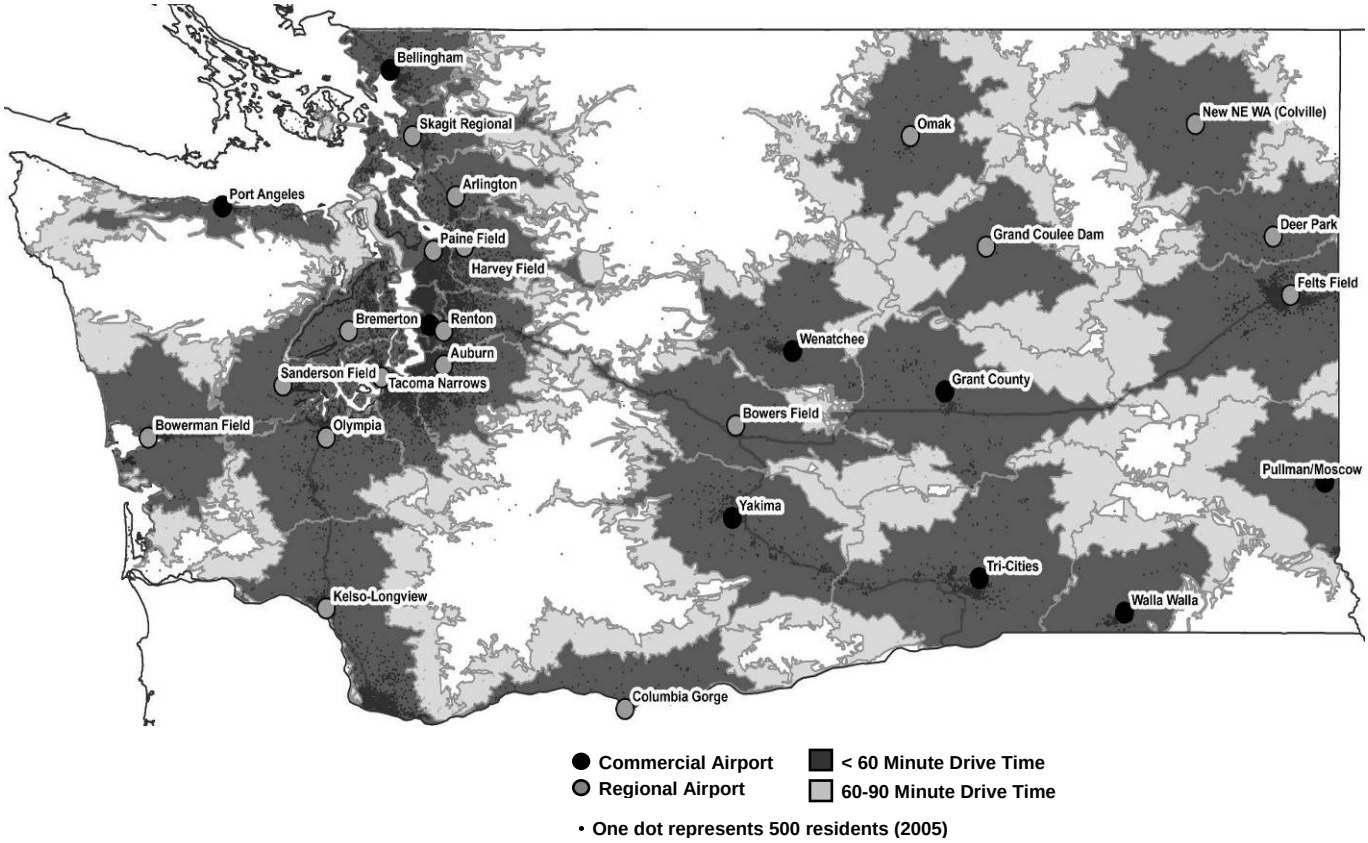
Identifying the airports that should be included in the Regional Service classification required extensive analysis of driving times and population densities. The map below shows how well the 19 Regional Service Airports, plus nine comparable Commercial Service Airports,[15] provide access to Washington's population.

The darker shading represents area within a 60-minute driving time of the analyzed airports, and the lighter shading shows the area within 60- to 90-minutes' driving time. Each black dot represents 500 people.

Approximately 96 percent of the population and 43 percent of the land area is within 60 minutes of the mapped airports. Within 90 minutes are 99 percent of the state's population and 69 percent of the land area. When all these airports are improved so that they meet the performance objectives that make them jet-capable, the goal for nearly all Washington residents to be within 90 minutes of a jet-capable airport will have been achieved.

[15] Because they have reliever airports designated to relieve them of general aviation traffic, neither Sea-Tac International and Spokane International was considered a comparable Commercial Service Airport in the service area analysis. All other Commercial Service Airports with a runway at least 4,000 feet long were included in the analysis.

Figure 21: Access to Regional Service Airports and Comparable Commercial Service Airports



As shown on the map above, about one-third of Washington's land area is more than 90 minutes from a Regional Service or comparable Commercial Service airport. Several of these areas were determined not to need 90-minute access, due very low population density, insurmountable physical constraints for airport development (mountains and ocean), or access to a comparable airport in the adjacent state. Parts of the San Juan Islands, North Cascade Mountains, Olympic Peninsula, Long Beach Area, South Cascade Mountains, Klickitat County, Adams County, and the Southeast corner of the state will remain beyond the 90-minute driving time to a "jet capable" airport. These areas contain only 1percent of the state's population.

Community Service Airports

Community Service Airports serve small to medium-sized communities. Primarily used by piston-driven general aviation aircraft, these airports are busy enough to warrant aviation support services such as fuel sales. Typically, Community Service Airports are owned by a public entity and have 30-minute (driving time) service area coverage.

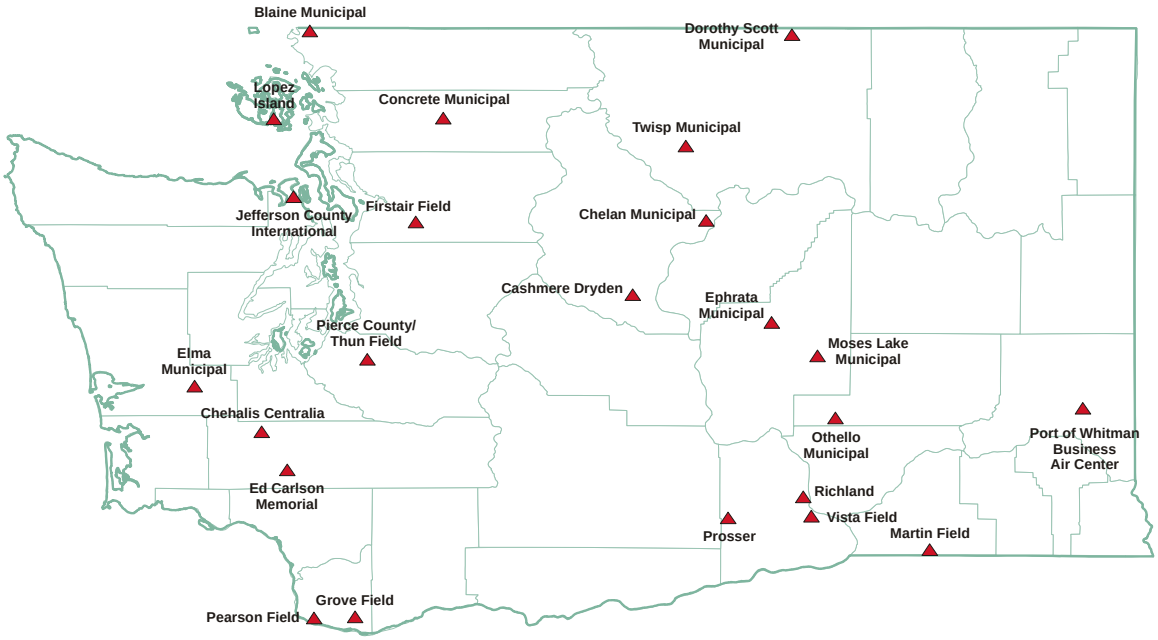
Community Service Airports meet the following threshold criteria:

- Have at least 20 based aircraft.
- Have a paved runway.

Figure 22: State Classification – Community Service Airports

Name	City
Blaine Municipal	Blaine
Cashmere/Dryden	Cashmere
Chehalis Centralia	Chehalis
Chelan Municipal	Chelan
Concrete Municipal	Concrete
Dorothy Scott Municipal	Oroville
Ed Carlson Memorial	Toledo
Elma Municipal	Elma
Ephrata Municipal	Ephrata
Firstair Field	Monroe
Grove Field	Camas
Jefferson County International	Port Townsend
Lopez Island	Lopez
Martin Field	College Place
Moses Lake Municipal	Moses Lake
Othello Municipal	Othello
Pearson Field	Vancouver
Pierce County/Thun Field	Puyallup
Prosser	Prosser
Richland	Richland
Twisp Municipal	Twisp
Vista Field	Kennewick
Port of Whitman Business Air Park	Colfax
Blaine Municipal	Blaine

Figure 23: Community Service Airports



Local Service Airports

Like the Community Service Airports, Local Service Airports serve small to medium-sized communities and are primarily used by piston-driven general aviation aircraft. However, Local Service Airports host lower levels of aviation activity and typically have fewer, if any, pilot or aircraft services. Typically, these airports are owned by a public entity and have 30-minute (driving time) service area coverage.

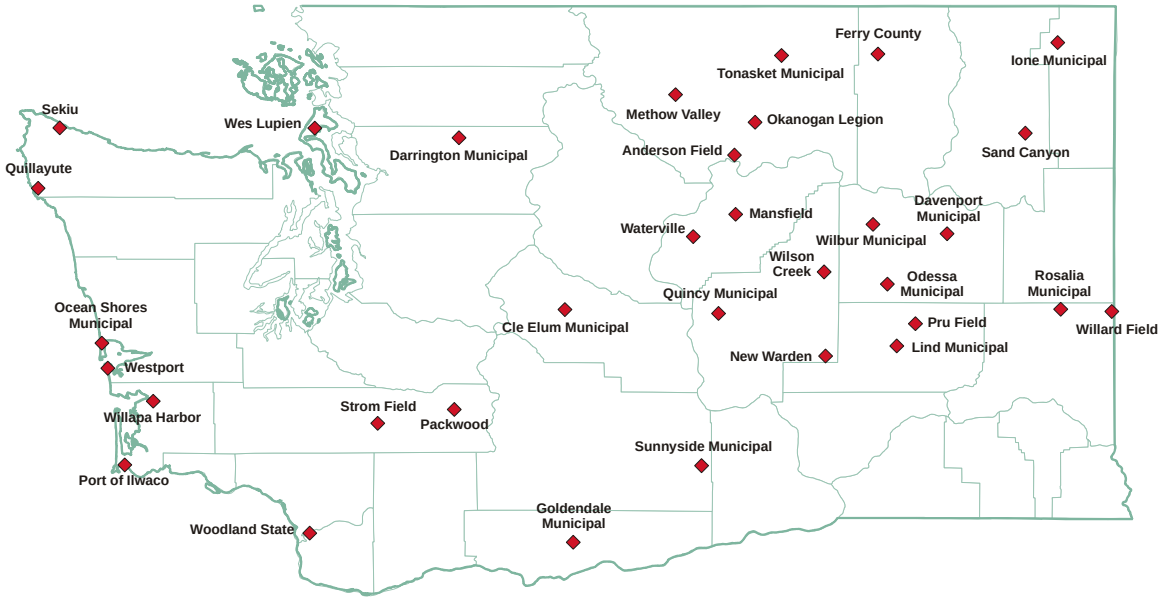
Local Service Airports meet the following threshold criteria:

- Have fewer than 20 based aircraft.
- Have a paved runway.

Figure 24: State Classification – Local Service Airports

Name	City
Anderson Field	Brewster
Cle Elum Municipal	Cle Elum
Darrington Municipal	Darrington
Davenport Municipal	Davenport
Ferry County	Republic
Goldendale Municipal	Goldendale
Ione Municipal	Ione
Lind Municipal	Lind
Mansfield	Mansfield
Methow Valley	Winthrop
New Warden	Warden
Ocean Shores Municipal	Ocean Shores
Odessa Municipal	Odessa
Okanogan Legion	Okanogan
Packwood	Packwood
Port of Ilwaco	Ilwaco
Pru Field	Ritzville
Quillayute	Quillayute
Quincy Municipal	Quincy
Rosalia Municipal	Rosalia
Sand Canyon	Chewelah
Sekiu	Sekiu
Strom Field	Morton
Sunnyside Municipal	Sunnyside
Tonasket Municipal	Tonasket
Waterville	Waterville
Wes Lupien	Oak Harbor
Westport	Westport
Wilbur Municipal	Wilbur
Willapa Harbor	South Bend (Raymond)
Willard Field	Tekoa
Wilson Creek	Wilson Creek
Woodland State	Woodland

Figure 25: Local Service Airports



Recreation or Remote Airports

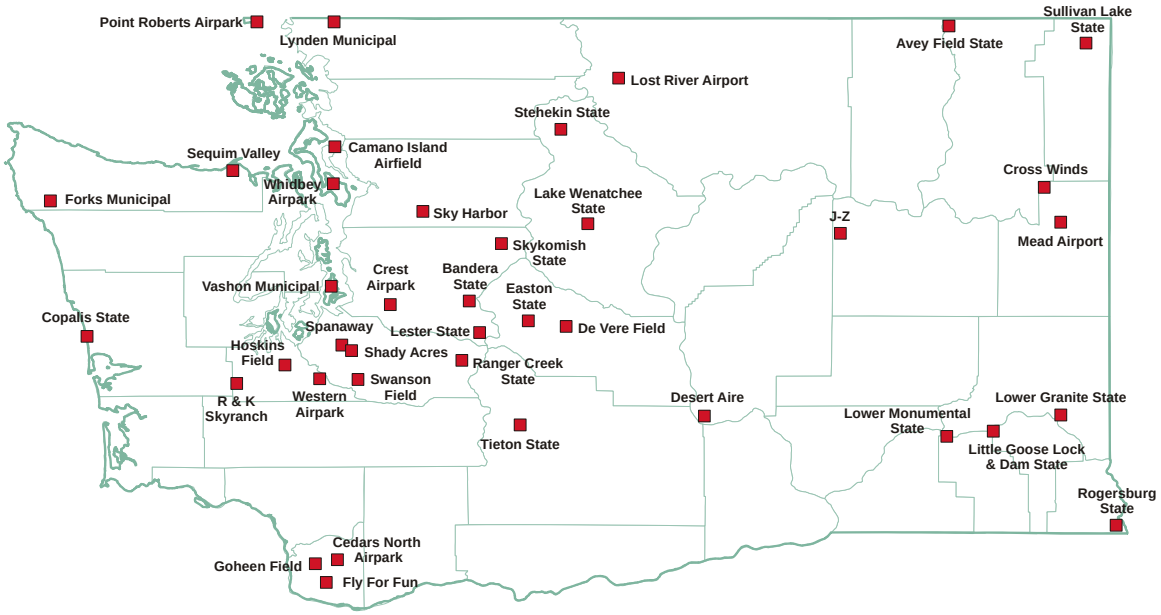
Recreation or Remote Airports include airparks, which combine residential housing with an airport. Many of these airports have private owners, are located in unpopulated areas or small unincorporated communities, lack paved runways, and/or may only used seasonally.

This classification includes all land-based airports that are open to public use, but do not meet the threshold criteria for Commercial Service, Regional Service, Community Service, or Local Service Airports. These airports typically serve recreation communities or leisure destinations and remote backcountry locations. These airports may also be strategically located for emergency and firefighting access in mountainous or other remote areas. Recreation or Remote Airports also include airparks, which combine residential housing with an airport. Many of these airports have private owners, are located in unpopulated areas or small unincorporated communities, lack paved runways, and/or may only be used seasonally. Some of the Recreation or Remote Airports are very busy airparks. For example, Crest Airpark has over 300 based aircraft. Nevertheless, the presence of residential uses close to the runway may pose a challenge for airport operations. Residential land uses are generally considered incompatible land uses when located adjacent to airports because airport operations create noise, vibrations and other effects that affect quality of life. While residents of airpark communities are typically aircraft owners, properties could eventually be sold to persons who do not own aircraft or are not aviation enthusiasts, which could affect the long-term viability of the airport. For this reason, their role in providing transportation access in the state system is limited.

Figure 26: State Classification – Recreation or Remote Airports

Name	City
Avey Field State	Laurier
Bandera State	Bandera
Camano Island Airfield	Stanwood
Cedars North Airpark	Battle Ground
Copalis State	Copalis
Crest Airpark	Kent
Cross Winds	Clayton
Desert Aire	Mattawa
DeVere Field	Cle Elum
Easton State	Easton
Fly For Fun	Vancouver
Forks Municipal	Forks
Goheen Field	Battle Ground
Hoskins Field	Olympia
J-Z	Almira
Lake Wenatchee State	Leavenworth
Lester State	Lester
Little Goose Lock & Dam State	Starbuck
Lost River Airport	Mazama
Lower Granite State	Colfax
Lower Monumental State	Kahlotus
Lynden Municipal	Lynden
Mead Airport	Mead
Point Roberts Airpark	Point Roberts
R & K Skyranch	Rochester
Ranger Creek State	Greenwater
Rogersburg State	Anatone
Sequim Valley	Sequim
Shady Acres	Spanaway
Sky Harbor	Sultan
Skykomish State	Skykomish
Spanaway	Spanaway
Stehekin State	Stehekin
Sullivan Lake State	Metaline Falls
Swanson Field	Eatonville
Tieton State	Rimrock
Vashon Municipal	Vashon
Western Airpark	Yelm
Whidbey Airpark	Langley

Figure 27: Recreation or Remote Airports



Seaplane Bases

Seaplane bases serve amphibious and float-equipped aircraft.

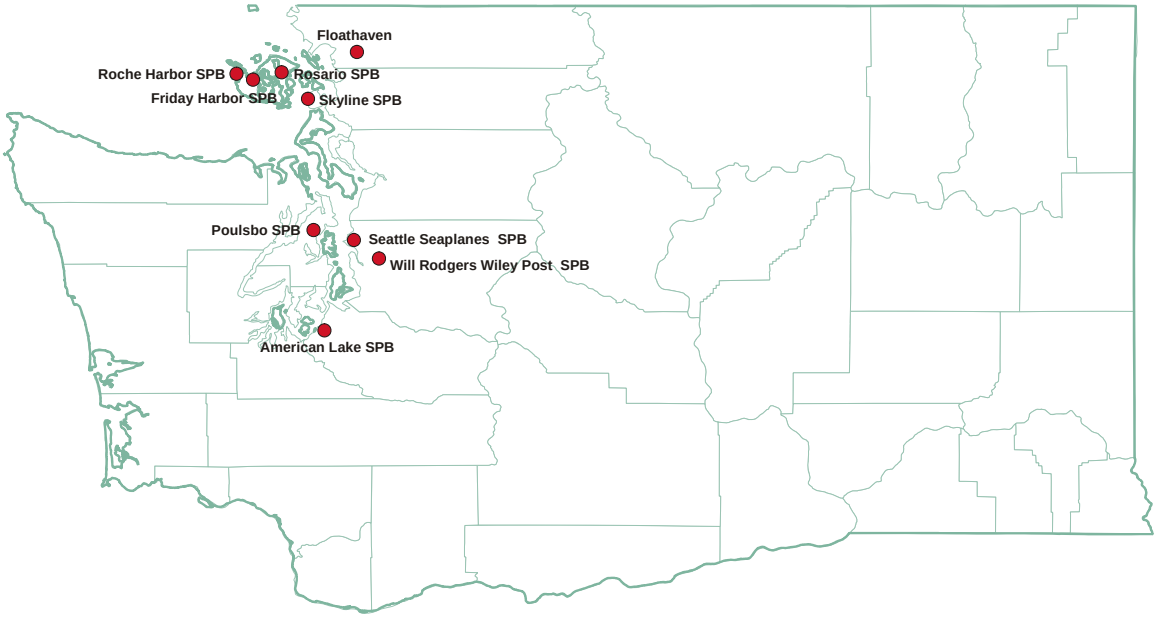
Seaplane bases serve amphibious and float-equipped aircraft and may have some upland facilities that support aircraft maintenance and other services. Most seaplane bases in Washington are located in the Puget Sound area. Seaplane Bases meet the following threshold criterion:

- Are reported as seaplane bases in the Airport Facility Directory (based on FAA Form 5010 reports), except for those providing at least 2,500 annual scheduled passenger boardings.

Figure 28: State Classification – Seaplane Bases

Name	City
American Lake SPB	Tacoma
Floathaven SPB	Bellingham
Friday Harbor SPB	Friday Harbor
Poulsbo SPB	Poulsbo
Roche Harbor SPB	Roche Harbor
Rosario SPB	Rosario
Seattle Seaplanes SPB	Seattle
Skyline SPB	Anacortes
Will Rogers Wiley Post SPB	Renton

Figure 29: Seaplane Bases



Performance Objectives

While the classification system assigns airports based on their function and role, the performance objectives set targets for each classification level and represent goals for Washington's air transportation system. The performance objectives are used to evaluate facilities, services, and other factors important to preserving the airport system. Assessing if individual airports meet their appropriate performance objectives helps to identify improvement needs. In some cases, an airport may exceed these objectives to satisfy a particular local need or FAA design standard. On the other hand, there may also be instances in the system where an airport is not able to comply fully with all objectives.

One of the revisions to the Phase I performance assessments was to eliminate all criteria that could not be measured objectively. Compliance with performance objectives was measured using:

- The database updated in 2007.
- Information researched in Phase I, interviews.
- Information from Airport Layout Plans.
- WSDOT's 2003 database.
- FAA Master Records (5010 forms).
- Information from www.AirNav.com, as applicable.

The following matrix summarizes the performance objectives and indicates their applicability to the various state classifications. Two types of performance objectives are proposed: 1) those that relate to all classifications, and 2) those that are customized for the facilities and services appropriate to each classification. More detail about each objective is presented in the following section.

Figure 30: Performance Objectives and Their Applicability to Airport Classifications

	Objective	Com-mercial Service	Regional Service	Community Service	Local Service	Recreation or Remote	Seaplane Base
Operational Factors	Standard runway safety area	x	x	X	x	x	NA
	Runway PCI 75	x	x	X	x	x	NA
	Taxiway PCI 70	x	x	X	x	x	NA
	Apron PCI 70	x	x	X	x	x	NA
	No obstacles in threshold siting surface	x	x	X	x	x	X
	No obstacles in obstacle free zone	x	x	X	x	x	X
Plan	Planning documents less than 7 years old	x	x	x	x	x	X
Land Use Compatibility Protection	Compatibility policies in comprehensive plan	x	x	x	x	x	X
	Appropriate zoning designation for airport	x	x	x	x	x	X
	Land use controlled in runway protection zones	x	x	x	x	x	X
	Height hazard zoning or regulations	x	x	x	x	x	X
	Zoning discourages incompatible development	x	x	x	x	x	X
Facilities	Runway Length	5,000 feet	5,000 feet	3,200 feet	2,400 feet	No objective	No objective
	Taxiway	Parallel	Parallel	Parallel	Turn-around	Turn-around	No objective
	Instrument Approach	Lower than ¾ mile visibility minimum	Lower than ¾ mile visibility minimum	1 mile visibility minimum	No objective	No objective	No objective
	Lighting	Medium intensity	Medium intensity	Medium intensity	Low intensity	Reflectors	NA
	Visual Glide Slope Indicators	x	x	x	x	No objective	NA
	Weather Reporting	AWOS or ASOS	AWOS or ASOS	Super-Unicom	No objective	No objective	No objective
	Dock Facility	NA	NA	NA	NA	NA	Yes
Services	Fuel Sales	Jet A and 100LL	Jet A and 100LL	100LL	No objective	No objective	No objective
	Maintenance Service	Major	Major	Minor	No objective	No objective	No objective

These performance objectives are described in more detail in the following sections. The assessment of system performance is presented in charts that show the percentage of airports within each classification and statewide that comply with each objective.

How was the percentage of compliance determined?

The performance compliance percentage is calculated as the number of airports meeting the objective divided by the number of airports for which the objective is relevant and information is available to determine compliance.

The performance compliance percentage is calculated as the number of airports meeting the objective divided by the number of airports for which the objective is relevant and information is available to determine compliance. For example, unpaved runways do not have Pavement Condition Indices, so the runway Pavement Condition Index objective is not relevant to the Recreation or Remote Airports that lack paved runways. Also, many Recreation or Remote Airports do not have Airport Layout Plan drawing sets and were not included in previous field surveys that measured runway safety area size and compliance with FAA design standards. Consequently, for the runway safety area objective, these airports are excluded from the calculation of percentage compliance.

Operational Factors

No matter what its classification, an airport should provide an appropriate aircraft operating environment, measured by the following:

- Runway safety areas are in compliance with FAA standards.
- Airfield pavements are in good or excellent condition, measured by the following minimum Pavement Condition Indices (PCI):
  - 75 for runways.
  - 70 for taxiways and aprons.
- No obstacles are in the runway threshold siting surfaces or obstacle free zones.

The purpose of the runway safety area is to minimize injuries and damage and to facilitate recovery if an aircraft overshoots or undershoots the runway.

Standard Runway Safety Area

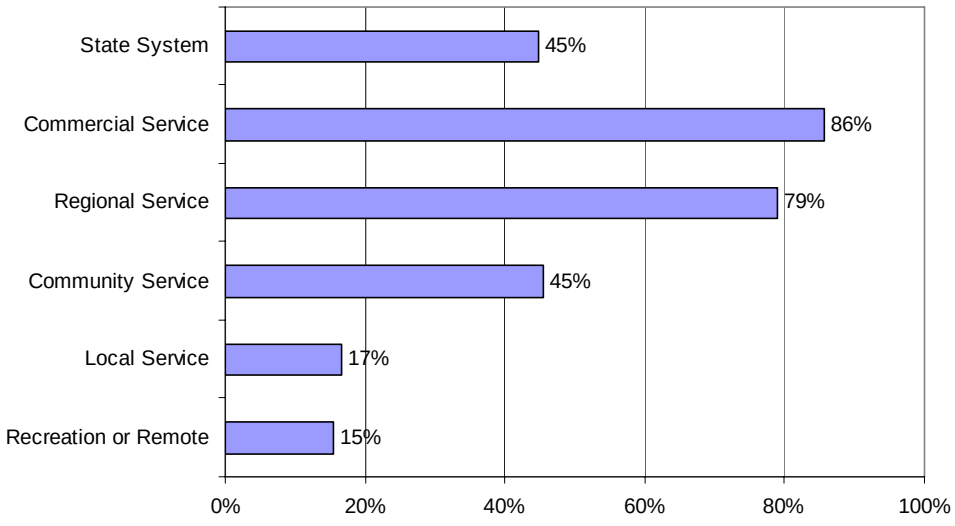
Improving runway safety areas to meet their appropriate FAA standards is an objective that has been a high FAA priority in recent years. The purpose of the runway safety area is to minimize injuries and damage and to facilitate recovery if an aircraft overshoots or undershoots the runway. The runway safety area is centered on the runway, with a size defined in FAA Advisory Circular 150/5300-13, *Airport Design*. The size depends upon the design aircraft and level of instrument approach for the runway. The runway safety area is cleared, graded, and capable of supporting snow removal equipment, aircraft rescue and firefighting equipment; and the

occasional passage of aircraft without causing structural damage to the aircraft. The runway safety area objective does not apply to Seaplane Bases because water is the surface for takeoff and landing.

The chart below shows the percentage of airports by classification that meet the Standard Runway Safety Area objective. Nearly all the Commercial Service and Regional Service airports meet the objective, but statewide, less than half the airports do. So far, the FAA has focused runway safety area improvement funding on airports with commercial service certificates and airports with more than 75 based aircraft. Consequently, it is not surprising that runway safety area compliance is high in these categories and considerably lower in the Community Service, Local Service, and Recreation or Remote Airport classifications, which have many airports with fewer than 75 based aircraft and the majority that are not in the NPIAS.

Several smaller airports lack data to determine if the safety areas are standard. Not all airports were included in WSDOT Aviation's 2000 inventory, and many have not yet completed an Airport Master Plan/Airport Layout Plan, which reports on runway safety area compliance. WSDOT Aviation now requires that an Airport Master Plan/Airport Layout Plan be completed before an airport may receive grant funding for facility improvements, and issues grant awards to support these planning efforts. As more Airport Layout Plans are accomplished, the Runway Safety Area analysis will be more complete.

Figure 31: Standard Runway Safety Area Performance Assessment

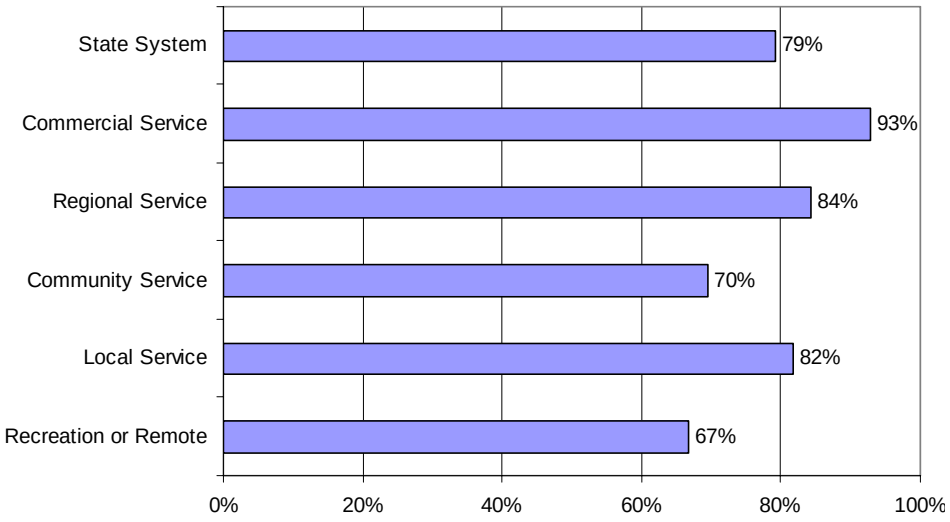


Pavement Condition

Keeping airfield pavements in serviceable condition is another objective that aligns well with FAA priorities. The Pavement Condition Index (PCI) is used to measure pavement condition. A PCI rating of 100 represents brand new pavement in perfect condition, while a PCI of 0 represents completely failed pavement. The PCI objective for runways, 75, is higher than the PCI objective for taxiways and aprons, 70, because pavement condition is more critical to safety when airplanes are taking off or landing than when they are taxiing.

Washington's airports with airfield pavements perform well for the pavement condition objectives, as shown in the next three charts. The source for most PCI data is a 2006 pavement condition survey[16] that was not performed for all privately owned airports.

Figure 32: Runway Pavement Condition Performance Assessment



[16] Washington Statewide Airport Pavement Management Report, August 2006, Applied Pavement Technology, Inc.

Figure 33: Taxiway Pavement Condition Performance Assessment

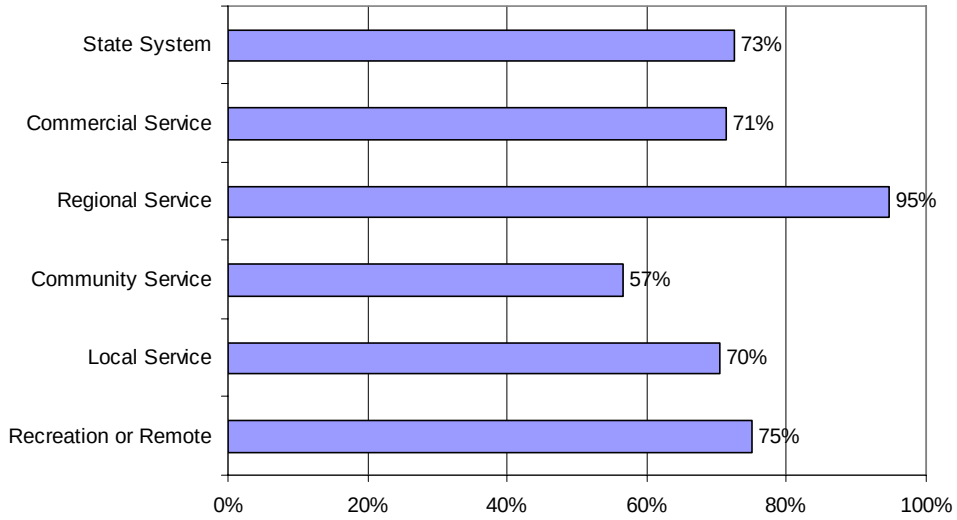
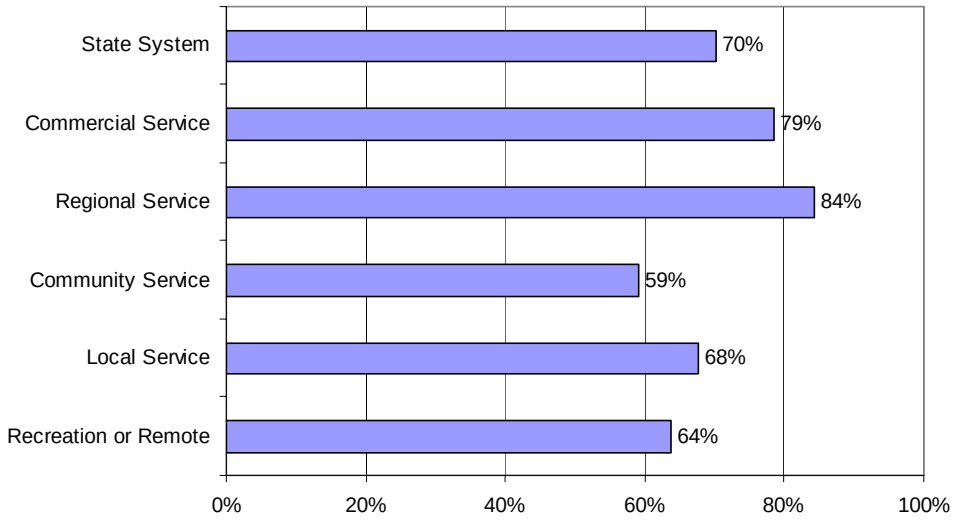


Figure 34: Apron Pavement Condition Performance Assessment



For safety reasons, it is important that airports have designated airspace for aircraft arrivals and departures that are free of obstructions.

No Obstacles in Threshold Siting Surfaces and Obstacle Free Zones

A performance objective applicable to all airport classifications in Washington's system is protection of airspace from height hazards. For safety reasons, it is important that airports have designated airspace for

aircraft arrivals and departures that is free of obstructions. Terrain, buildings, trees, or vehicles exemplify objects that could be hazardous to aircraft during takeoff or landing if they extend into this protected area. Part 77 of Title 14 of the Code of Federal Regulations, commonly known as FAR Part 77, defines various imaginary surfaces that should be cleared around an airport and is the basis for most height hazard zoning and regulations around airports.

Airport Design contains requirements for runway end siting and obstacle free zones that are aligned with the criteria that determine if an obstruction is a hazard to aviation. The threshold siting surface is a surface similar to the approach surface defined in Part 77, but is generally narrower, shorter, and has a higher slope. Any penetrations to this surface must be removed or operational penalties will result, such as threshold displacement or the raising of approach visibility minimums for instrument approaches.

Obstacle Free Zones (OFZ) primarily surround the runway, similar to Part 77's primary surface. Transitional and approach OFZ are also applicable for instrument runways. As with objects in the threshold siting surface, operational penalties can result when objects penetrate the OFZ. Operational penalties that the FAA may impose on an airport with an obstacle in the threshold siting surface or OFZ would maintain aviation safety, but they could also seriously degrade the usefulness of an airport. Examples include the following:

In Washington, state law requires towns, cities, and counties to discourage development of incompatible land uses adjacent to public-use airports through adoption of comprehensive plan policies and development regulations.

- Runway Threshold. Displacing a runway threshold would shorten the useable runway. Shortening the useable runway could reduce the types of aircraft that could use the runway or reduce aircraft payloads or fuel loads, which could result in a negative economic impact on the aircraft operator and the local community.

- Visibility Minimum. If a runway has an instrument approach, the FAA might raise the visibility minimums for the instrument approach, in order to keep landing aircraft a safe distance above an object. Higher visibility minimums increase the amount of time an airport is closed due to weather, which reduces availability of the airport for emergencies, as well as for business and recreation purposes.

Since Airport Layout Plans typically show Part 77 obstructions and not threshold siting surface or OFZ obstructions, there are few airports that have the data available to assess these performance objectives. None of the Recreation or Remote Airports and none of the Seaplane Bases have data available. Due to the lack of data, compliance charts have not been prepared for threshold siting surface and OFZ objectives. Nevertheless, they are vitally important to aviation safety and to the preservation of airports.

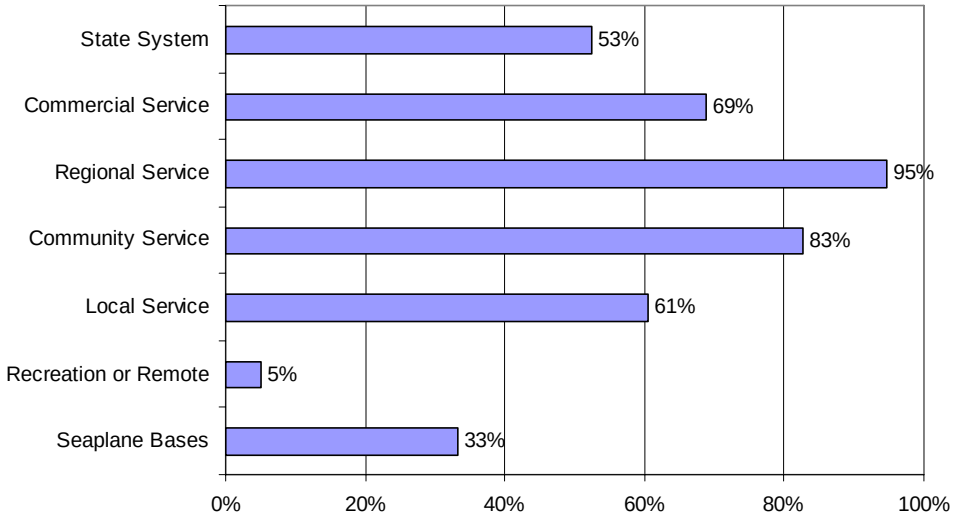
WSDOT Aviation will expend additional effort to measure this performance objective by launching a pilot program in 2009 to survey obstructions, a program focused on adding instrument approaches to visual runways. This program provides a means for measuring more airports for compliance with the objectives to have clear threshold siting surfaces and obstacle free zones. This pilot program is identified as a priority project in the Washington Transportation Plan (WTP).

Up-to-Date Plans

The objective for the Airport Layout Plan (ALP) and narrative airport plan (Master Plan or ALP Report) to be not more than seven years old applies to all airport classifications. Having an up-to-date plan equips airports with a strategy that allows them to adjust to changing conditions both on- and off-airport and to ensure the long-term viability of the airport. Seven years is an interval for updating that matches Washington's Growth Management Act requirement for updating comprehensive plans. If there has been little change in socioeconomic conditions, physical development, or airport activity since the last publication of planning documents for the airport, a full update may not be warranted.

The following chart shows that very few Recreation or Remote Airports have up-to-date plans, while nearly all the Regional Service Airports do. Airports that have ongoing planning studies were considered to meet the objective. The percentage of Commercial Service Airports meeting the objective seems surprising low (69 percent), but may be due to a number of factors. These airport plans are sometimes controversial and can take several years and large budgets to complete. Two of the 16 Commercial Service Airports are privately owned seaplane bases that lack published planning documents. Finally, some sponsors of Commercial Service Airports engage in continuous planning and ALP updates with in-house staff.

Figure 35: Up-to-Date Plan Performance Assessment



Land Use Compatibility Protection

The primary purpose of land use controls around an airport is to protect the airport environs from encroachment that could compromise the integrity of the airport operations, now or in the future. In Washington, state law requires towns, cities, and counties to discourage development of incompatible land uses adjacent to public-use airports through adoption of comprehensive plan policies and development regulations. Communities that are considered "fully planning" under Washington's Growth Management Act are also required to recognize those airports as essential public facilities.

All public use airports in the state should ensure that towns, cities and counties adopt policies and regulations to meet the following goal and its underlying objectives.

Comprehensive plan policies and development regulations aid in ensuring compatible land use adjacent to the airport, determined by meeting the following:

- Compatible land use policies are in the comprehensive plan.
- Airport zoning designation is appropriate (*i.e.*, Airport, Industrial, or Public Use).

- Runway protection zones (RPZ) are on airport property, or compliance with FAA's land use standards for RPZs is ensured by easement or development regulation.

- Zoning is in place to regulate height hazards or regulations prohibit penetrations of FAR Part 77 surfaces.

- Zoning (development) regulations are in place to discourage incompatible development near airports.

Airports within urban growth boundaries were required to have compatibility policies in both City and County comprehensive plans to meet the objective "compatible land use policies in the comprehensive plan." Seaplane bases were omitted from the analysis of appropriate airport zoning designation, since water areas are not zoned.

Zoning for on-airport and nearby off-airport land is an important way to implement and enforce land use compatibility protection for the airport and for airport neighbors, as is the control of RPZs. The RPZ is an area off each runway end whose purpose is to enhance the protection of people and property on the ground. The RPZ size ranges from eight to 79 acres, depending on the critical design aircraft and the type of approach to the runway. FAA design standards prohibit residences and places of public assembly (churches, schools, hospitals, etc) in RPZs.

The next charts show how well Washington's airports comply with the land use compatibility objectives. Compliance with nearly all the land use compatibility objectives is noticeably lower in all classifications than the previous objectives, indicating the state needs significant improvement in land use compatibility protection around airports. Without land use compatibility protection, the existing capacity and capability of some airports is in jeopardy, as is the ability to expand airport capacity and capability to meet future needs.

WSDOT Aviation has several projects currently underway that will address these issues. For example, the agency is currently working with the Department of Community Trade and Economic Development (CTED) and the Puget Sound Regional Council (PSRC) to update the *Airports and Compatible Land Use* guidebook, published in 1999. In addition, WSDOT provides ongoing technical assistance to towns, cities and counties working on airport land use compatibility issues. Finally, WSDOT is working on additional guidance materials in cooperation with the National Association of State Aviation Officials (NASAO) and the Aircraft Owners and Pilots Association (AOPA).

Figure 36: Compatibility Policies Performance Assessment

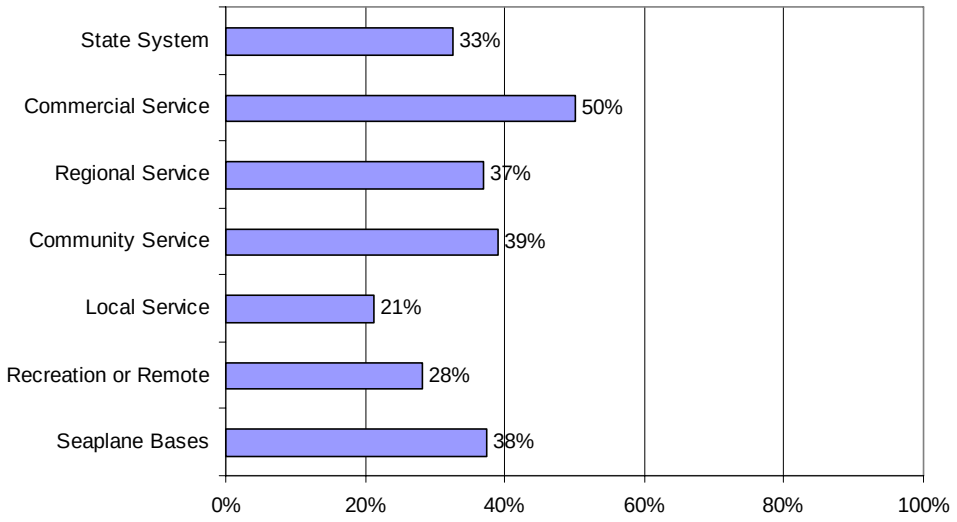


Figure 37: Appropriate Airport Zoning Performance Assessment

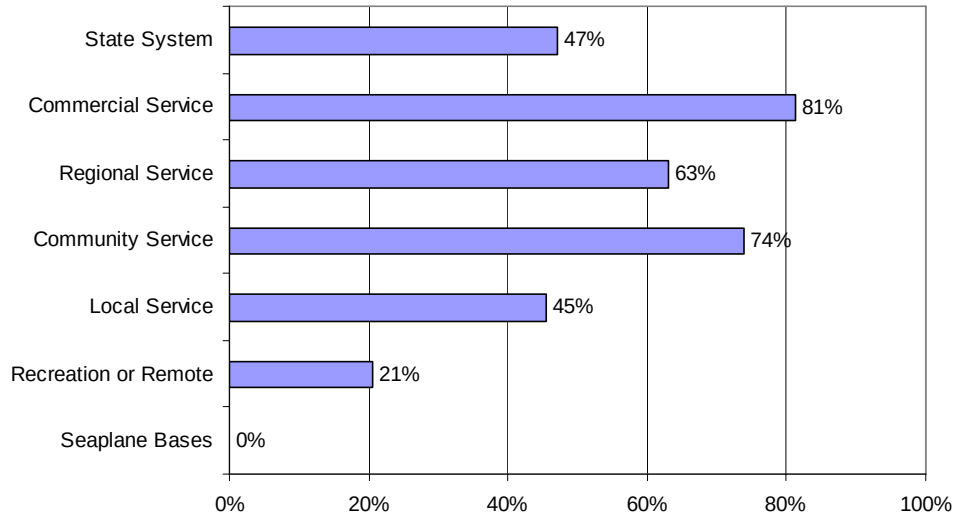


Figure 38: Runway Protection Zone Control Performance Assessment

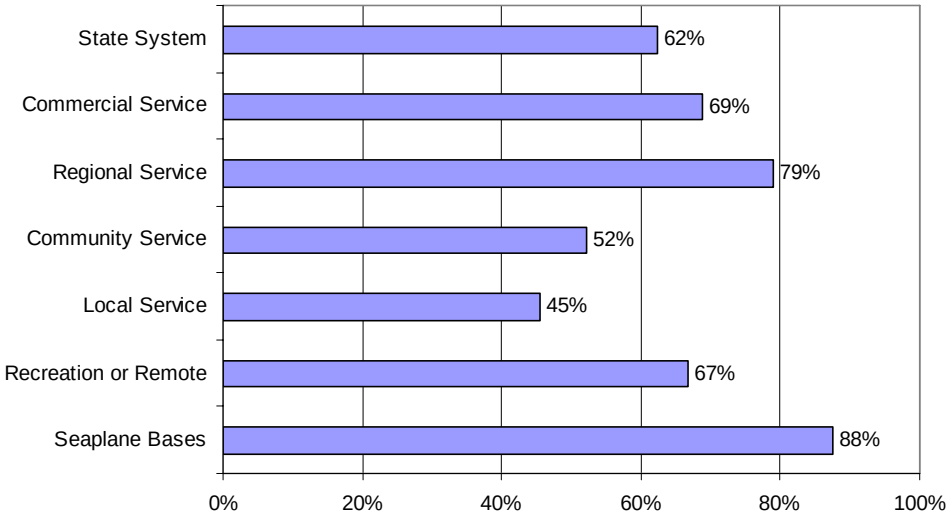


Figure 39: Height Hazard Control Performance Assessment

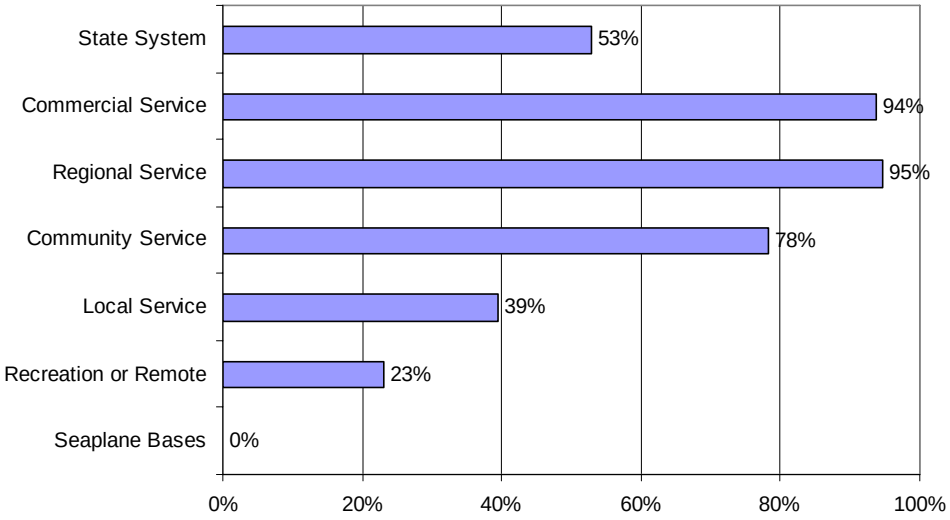
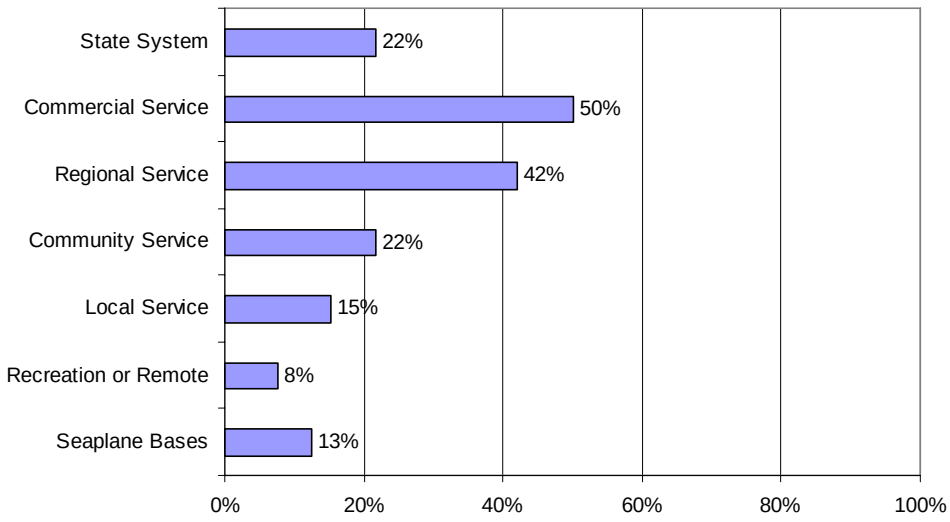


Figure 40: Compatibility Control by Zoning Performance Assessment



Overview of Facility and Service Objectives

The following performance objectives related to airport facilities and services are tailored to the various airport classifications. The following sections provide descriptions of each of the objectives, followed by results of the analysis.

The Commercial Service and Regional Service Airports have the same facility and service objectives

- The Commercial Service and Regional Service Airports have the same facility and service objectives because of the similarity of baseline needs for commercial passenger jets and corporate jets. Another reason for having the same performance objectives is that some airports will move between the two classifications, as airline service starts and stops and as the number of annual passenger boardings fluctuates above and below 2,500.

Performance objectives for Community Service Airports are focused on providing airports that are not just adequate for a variety of general aviation aircraft, but also able to accommodate air taxi operations, including potential operations in very light jets (VLJ).

- Performance objectives for Community Service Airports are focused on providing airports that are not just adequate for a variety of general aviation aircraft, but also able to accommodate air taxi operations, including potential operations in very light jets (VLJ).

- Local Service Airports have facility and service objectives geared to serve small piston general aviation and visual operations.

- Recreation or Remote Airports and Seaplane Bases have no service objectives and few facility objectives, reflecting the lower level of facilities and services needed at these airports, compared to the other classifications.

The evaluations of performance objectives for facilities and services are presented by classification later in the chapter.

Facility Objectives

Airport facility performance objectives address runway length, taxiway, instrument approach, lighting, Visual Glide Slope Indicators (VGSI), weather reporting, and dock facilities.

The runway length performance objective is based on accommodating the type of aircraft and/or the instrument approach level that is appropriate for the airport role.

Runway Length

The runway length performance objective is based on accommodating the type of aircraft and/or the instrument approach level that is appropriate for the airport role. The runway length an aircraft needs depends on a combination of factors, including aircraft performance characteristics, operating weight, temperature, airport elevation, runway gradient, and runway surface condition. In addition, the FAA specifies minimum lengths required for runways to have instrument approaches.

Runway length should be determined for the critical design aircraft, which is the most demanding aircraft in regular, or substantial, use at the airport. The design temperature used in the length calculation is the mean maximum temperature in the hottest month; the design temperatures at Washington airports generally fall between 65 and 85 degrees F.

Runway length objectives are summarized in the following table. Longer runway lengths may be justified at certain airports based on analysis conducted according to FAA Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*.

Figure 41: Runway Length Performance Objectives

Classification	Runway Length Objective	Explanation
Commercial Service Regional Service	5,000 feet	Recommended for medium jets (40,000 pounds) at standard conditions* by the National Business Aircraft Association.
Community Service	3,200 feet	Minimum required by for an instrument approach without penalizing approach visibility minimums. Minimally adequate for air ambulance aircraft such as King Air and B200 (Wenatchee Executive Flight) and the new Very Light Jets (VLJ).
Local Service	2,400 feet	Adequate for 75 - 95% of the small aircraft fleet, using 65 – 85 degrees F for the design temperature. Minimum length required by FAA for an instrument approach.
Recreation or Remote	No objective	Not applicable
Seaplane Bases	No objective	Not applicable

*Standard conditions are 59 degrees F and sea level.

Note: Airport conditions may warrant a longer runway or an individual airport may require a longer runway for its critical design aircraft.

Taxiway

The taxiway objective relates to whether or not aircraft must taxi on the runway before takeoff or after landing. The lack of a full-length parallel taxiway connected to both ends of a runway reduces its capacity for aircraft operations. A parallel taxiway enhances safety by reducing the potential of taxiing aircraft colliding with aircraft departing or arriving on the runway. A full-length parallel taxiway is considered "fundamental" development for airports included in the NPIAS by FAA Order 5090.3C. However, FAA Order 5100.38C states that a partial parallel taxiway may be considered at NPIAS general aviation airports where the cost to construct the full length is excessive and the benefits do not warrant it. A parallel taxiway is required for a runway to have an instrument approach with visibility minimum lower than one statute mile. (A parallel taxiway is recommended for runways with higher visibility minimum instrument approaches.) One of FAA's runway gradient standards is for a runway to provide line of sight from one end to the other at a point five feet above the runway. If the runway has a full length parallel taxiway, the line of sight requirement is only for each half of the runway.

For Commercial Service, Regional Service, and Community Service Airports, the taxiway objective is:

- The primary runway has a full-length parallel taxiway.

For Local Service and Recreation or Remote Airports, the taxiway objective is:

- The primary runway has turnarounds at both ends that are deep enough for the design aircraft to stop beyond the hold line.

Turnarounds provide areas suitably surfaced and wide enough for aircraft to turn 180 degrees. If the primary runway at Recreation or Remote Airport or a Local Service Airport has a parallel taxiway, it more than meets the objective to have a turnaround at both ends.

The type of runway approach available at an airport—visual or instrument—determines whether or not the airport can be used in rainy, foggy, snowy, and dark conditions.

Visual approaches require that conditions be sufficiently clear so a pilot can see clearly without assistance from additional equipment.

Instrument approaches, on the other hand, have ceiling and horizontal visibility minimums that determine how bad the weather can be for the airport to remain open.

Instrument Approach

The type of runway approach available at an airport—visual or instrument—determines whether or not the airport can be used in rainy, foggy, snowy, and dark conditions. Visual approaches require that conditions be sufficiently clear so a pilot can see clearly without assistance from additional equipment. Instrument approaches, on the other hand, have ceiling and horizontal visibility minimums that determine how bad the weather can be for the airport to remain open. The minimums define the height above and distance from the airport where the pilot must be able to see the runway before committing to landing. FAA design standards differ according to the horizontal visibility minimum, expressed in statute miles. For this reason, performance objectives for instrument approaches are also based on horizontal visibility minimums.

Runway approach instrumentation enhances safety and the level of service of an airport. Instrument approaches provide pilots with navigational guidance to ensure they will avoid hazardous obstructions near their path to the runway. Without an instrument approach procedure, a runway can only be used in visual meteorological conditions, which means the pilot can see to avoid terrain and other obstacles while landing. Having an instrument approach that allows the airport to remain open in most weather conditions increases the reliability of air service, which is vital at Commercial Service Airports. Minimal airport closure due to weather "below minimums" is very important at any airport used for business aviation; business aviation typically flies by Instrument Flight Rules (IFR) all the time. An all-weather airport is also important at smaller airports for medical evacuation and other emergency purposes.

Until Global Positioning System (GPS) satellite navigation became available, ground-based navigational aids were required at or near an airport for it to have an instrument approach. Before GPS, there were only non precision and precision instrument approaches, which used a variety of navigational aids. A non precision approach provides a pilot with two-dimensional guidance to a runway, while a precision approach, such as an Instrument Landing System (ILS), also provides a third dimension--glide slope guidance. GPS-aided approaches are three dimensional. However, until the Wide Area Augmentation System (WAAS) was established in 2003, GPS approaches were only possible for visibility minimums comparable to non precision approaches — one statute mile. WAAS consists of ground-based transmitters located around the country to improve the accuracy of GPS signals. WAAS-aided GPS approaches are possible down to one-half mile visibility minimum—comparable to an ILS.

For Commercial Service and Regional Service Airports, the instrument approach objective is:

- At least one runway end has an instrument approach with approach visibility minimums lower than ¾ mile.

- For Community Service Airports, the instrument approach objective is:

- At least one runway end has an instrument approach with approach visibility minimums of 1 mile or less.

Lighting

Runway lights help pilots identify the runway location as they approach the airport to land.

Runway lighting refers to the type of edge lighting provided around the runway. Runway lights help pilots identify the runway location as they approach the airport to land.

- The FAA requires High Intensity Runway Lighting (HIRL) or Medium Intensity Runway Lighting (MIRL) for instrument approaches with visibility minimums lower than one statute mile. HIRL is only required for runway visual range (RVR)-based minimums.

- MIRL or Low Intensity Runway Lighting (LIRL) is required for instrument approaches with higher visibility minimums, although the FAA recommends installing MIRL instead of LIRL.

Runway lighting also helps pilots see visual runways at night. Where an airport lacks electrical power or where runway lights are not affordable, reflectors can be used to outline a visual runway. The approaching aircraft's lights are reflected, providing the pilot a better view of the runway location.

For Commercial Service, Regional Service, and Community Service Airports, the lighting objective is:

- Runway edge lighting is medium or high intensity (MIRL or HIRL).
- For Local Service Airports, the lighting objective is:
- The primary runway has edge lighting, low intensity LIRL or better.
- For Recreation or Remote Airports, the lighting objective is:
- The primary runway has reflectors or better (LIRL, MIRL, or HIRL)

Visual Glide Slope Indicators (VGSI)

VGSI are navigational aids that improve the safety and functioning of visual approaches.

VGSI are navigational aids that improve the safety and functioning of visual approaches. Lights convey to the pilot whether the aircraft is on the appropriate glide path to the runway threshold. Specifically, the various sequences of lights convey to the pilot whether the aircraft is above, below, or on the appropriate glide path to the runway threshold. Several different types of VGSI are in use, including the Precision Approach Path Indicator (PAPI), Visual Approach Slope Indicator (VASI), Pulsating Approach Slope Indicator (PLASI), and Pulsating Visual Approach Slope Indicator (PVASI).

The VGSI objective for Commercial Service, Regional Service, Community Service, and Local Service Airports is:

- Both ends of the primary runway have visual glide slope indicators.

Weather Reporting

Weather reporting on a real-time basis is important to aviation safety, particularly in areas where visibility can decrease quickly.

Weather reporting on a real-time basis is important to aviation safety, particularly in areas where visibility can decrease quickly. In addition, weather reporting equipment that can provide a certified altimeter reading is required for a runway to have an instrument approach. The types of weather reporting equipment are Automated Weather Observation System (AWOS), Automated Surface Observing System (ASOS), and

SuperUnicom, which is a less costly system than AWOS or ASOS and provides fewer certified weather readings.

Weather reporting systems are identified in the performance objectives for Commercial Service, Regional Service, and Community Service airports. WSDOT is conducting a statewide study to determine where frequent adverse weather conditions may warrant weather reporting equipment at Local Service airports, Recreation or Remote airports, or at off-airport locations such as mountain passes.

For Commercial Service and Regional Service airports, the weather reporting objective is:

- The airport has an automated weather reporting system (AWOS or ASOS).

- For Community Service Airports, the weather reporting objective is:

- The airport has an automated weather reporting system (Super Unicom, AWOS, or ASOS).

Dock Facilities

This objective applies only to Seaplane Bases. The objective is for the Seaplane Base to have a dock to facilitate passenger loading and unloading.

Service Objectives

Airport service performance objectives address fuel sales and aircraft maintenance.

Having fuel available for sale is an airport service that supports the viability of an airport and represents a potential source of revenue for the owner/operator.

Fuel Sales

Having fuel available for sale is an airport service that supports the viability of the facility and represents a potential source of revenue for the owner/operator. However, the investment in fuel-dispensing systems and storage is not economically feasible at low activity airports. Airports typically used only by piston-driven aircraft need 100LL (100 octane low lead) fuel available. Airports that are used frequently by jet and turboprop aircraft also need Jet A fuel available for sale.
For Commercial Service and Regional Service airports, the fuel sales objective is:

- 100LL and Jet A fuel sales are available.

For Community Service Airports, the fuel sales objective is:

- 100LL fuel sales are available.

Maintenance

Having aircraft maintenance service available is important, particularly at larger airports. This service provides annual maintenance checks that are required by the FAA for aircraft to operate. Maintenance levels identified for performance criteria are Full-Service Fixed Base Operator (FBO), Major Maintenance, and Minor Maintenance.

A Full-Service FBO is a business at an airport that provides a range of aircraft services, usually in addition to fuel sales. The FAA defines a fixed base operator as "an individual or firm operating at an airport and providing general aircraft services such as maintenance, storage, and ground and flight instruction." In their minimum standards for commercial aeronautical activities, airport owners often establish facility and service thresholds for businesses to be considered FBOs.

A Full-Service FBO is a business at an airport that provides a range of aircraft services, usually in addition to fuel sales.

Major Maintenance refers to repairs that may affect weight, balance, structural strength, power plant operations, flight characteristics, or other qualities affecting air worthiness.

Minor Maintenance is general or preventative maintenance other than major maintenance.

For Commercial Service and Regional Service airports, the maintenance objective is:

- Full-service FBO and major maintenance services are available.

Commercial Service Airports perform well in most categories. The two privately owned seaplane bases and island airports are generally the most deficient.

For Community Service Airports, the maintenance objective is:

- Minor maintenance service is available.

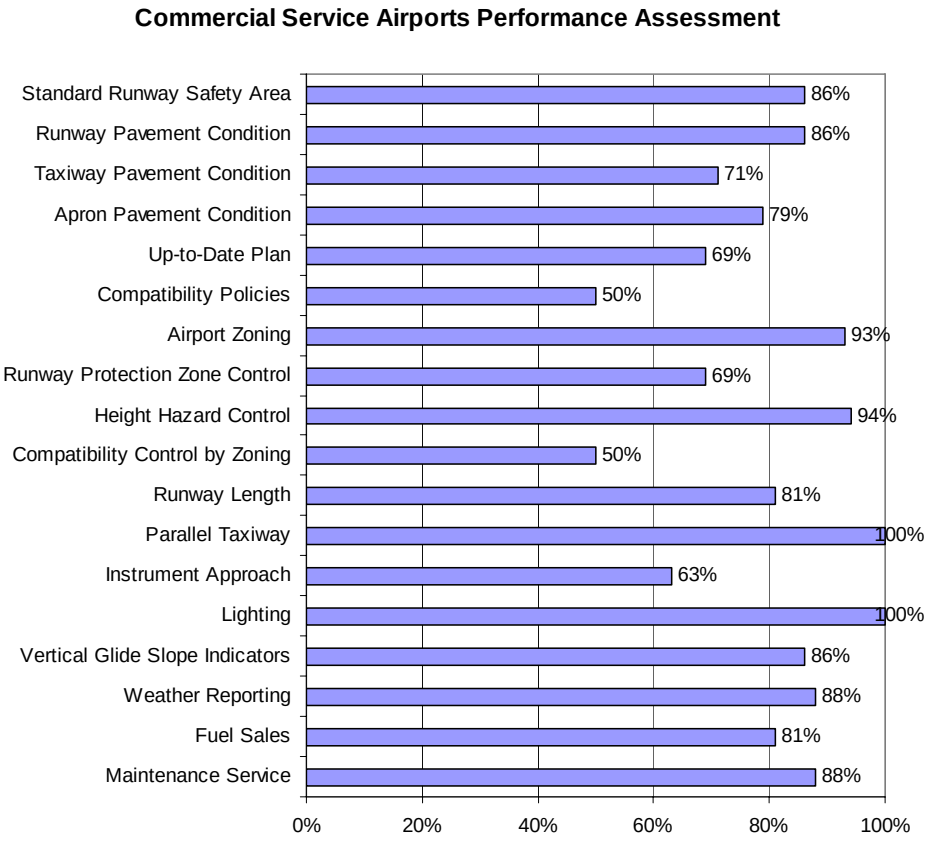
How is the Aviation System Performing Based on Objectives Set for Each Classification?

Commercial Service Airports Performance Assessment

Commercial Service Airports perform well in most categories. According to the FAA's 2007 Regional Airport Plan, projects planned in 2007 and 2008 will bring the nonstandard runway safety areas at Sea-Tac International and Yakima Air Terminal into compliance with design

standards, at which time 100 percent of Commercial Service Airports will comply with that objective. However, only half of the 16 Commercial Service Airports are protected by land use compatibility policies and zoning that discourages incompatible development around the airport. The number of airports with at least one instrument approach with a visibility minimum lower than ¾ mile is also relatively low, 63 percent. The two privately owned seaplane bases (Kenmore Air Harbor SPB and Kenmore Air Harbor Inc.) and island airports (Anacortes, Friday Harbor, and Orcas Island) are generally the most deficient in the performance assessment.

Figure 42: Commercial Service Airports Performance Assessment



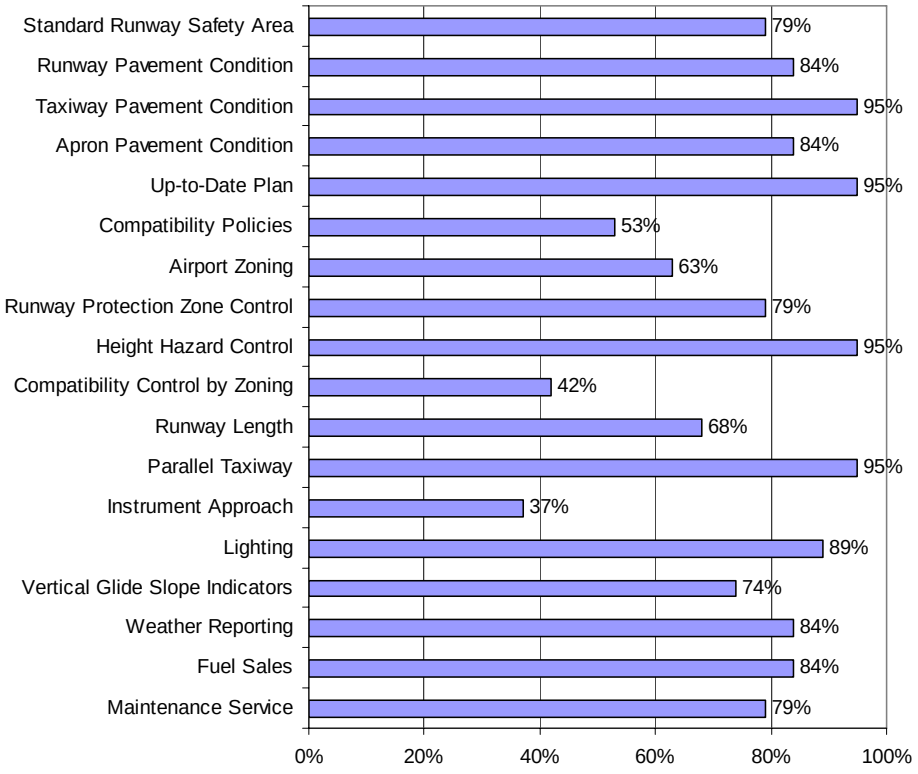
Regional Service Airports Performance Assessment

The percentage of Regional Service Airports meeting their performance objectives was slightly lower in most categories than the Commercial Service Airports, which were measured by the same objectives. Regional Service Airports scored higher in taxiway and apron condition and in having up-to-date plans than Commercial Service Airports. However, fewer than half of the 19 Regional Service Airports are protected by land use compatibility policies and zoning that discourages incompatible

development around the airport. In addition, only 37 percent of the airports meet the instrument approach objective.

Being only a "placeholder" for New Northeast Washington Regional Airport, it is not surprising that Colville Municipal is deficient in meeting the majority (ten out of 18) of the Regional Service Airport objectives. Harvey Field, a privately owned reliever airport, also does not meet ten of the 18 Regional Service Airport objectives.

Figure 43: Regional Service Airports Performance Assessment



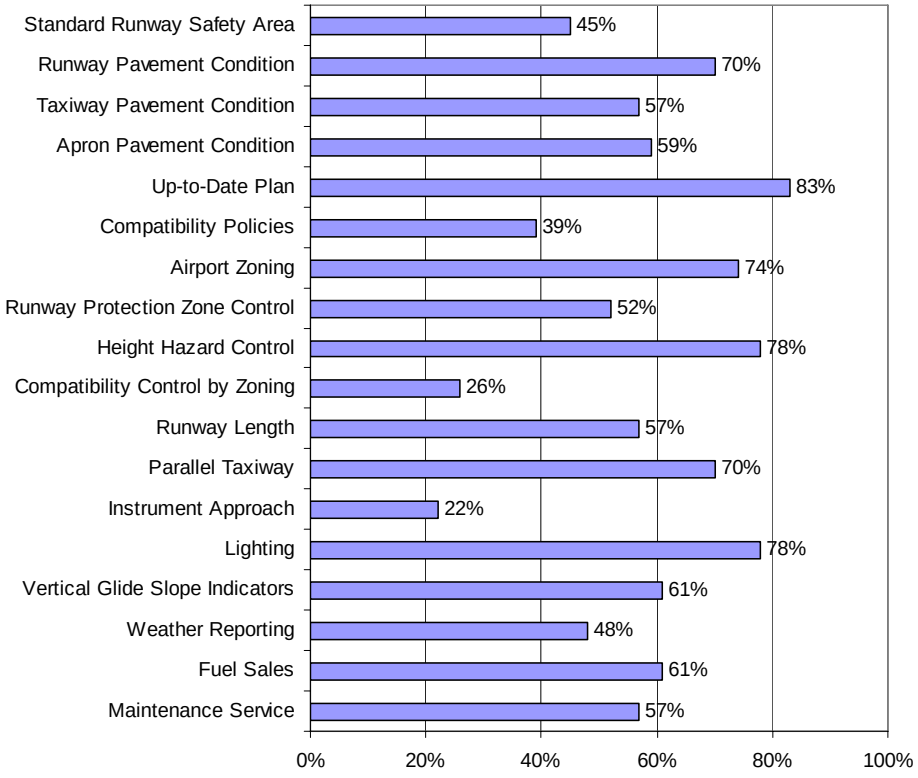
Community Service Airports Performance Assessment

For most objectives a smaller percentage of Community Service Airports meet the objectives than Regional Service Airports. The majority of the objectives show compliance by more than half of the 23 Community Service Airports.

Unfortunately less than half the Community Service Airports have compliant runway safety areas. So far, the FAA has focused runway safety area improvement funding on commercial service airports and airports with more than 75 based aircraft, so it is probably not surprising

that runway safety area compliance is considerably lower in this classification, which has many airports with fewer than 75 based aircraft and some airports that are not in the NPIAS. The two objectives that are most deficient are compatibility control by zoning and instrument approach. The objective with the highest level of compliance is up-to-date plan (83 percent).

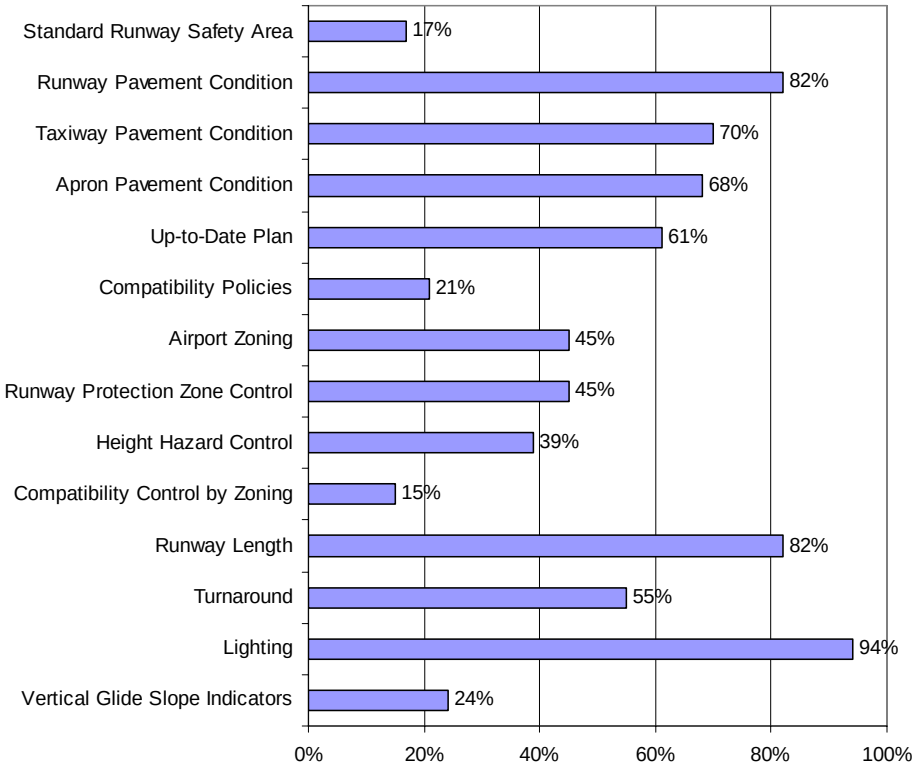
Figure 44: Community Service Airports Performance Assessment



Local Service Airports Performance Assessment

The 33 Local Service Airports show a wide range of compliance with performance objectives, from a low of 15 percent for compatibility control by zoning to a high of 94 percent for lighting. For both runway pavement condition and runway length, 82 percent of the Local Service Airports meet the objective. Less than half of the objectives showed compliance by more than half of the Local Service Airports, indicating a lower level of performance than Community Service Airports.

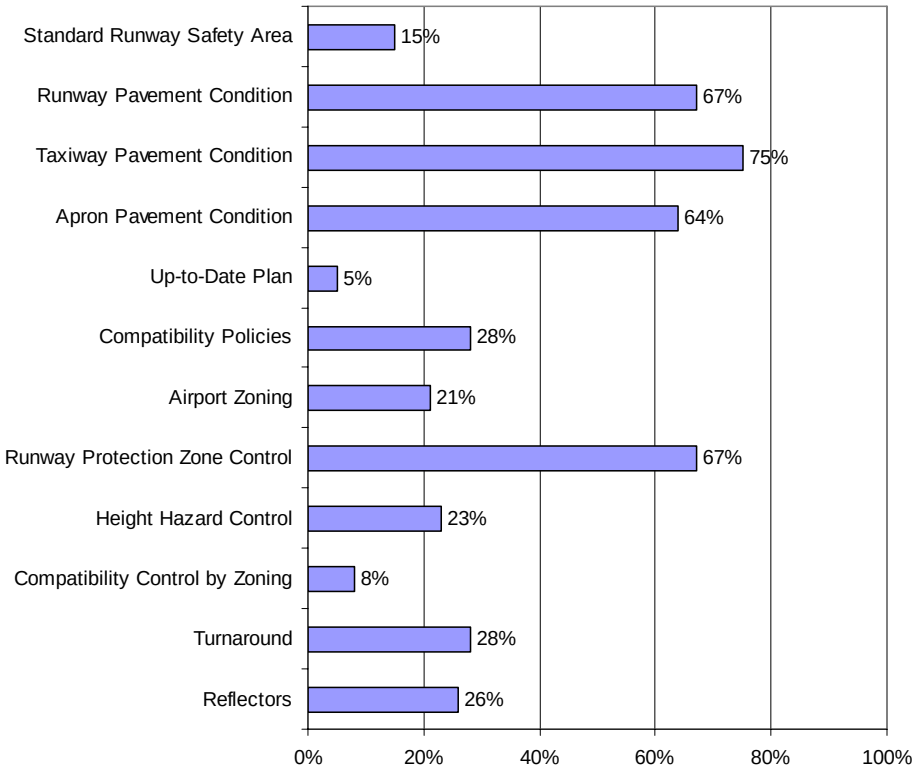
Figure 45: Local Service Airports Performance Assessment



Recreation or Remote Airports Performance Assessment

The 39 Recreation or Remote Airports show lower compliance with objectives than Local Service Airports. The three pavement condition objectives and the RPZ control objective show the highest level of compliance, between 64 percent and 75 percent, although it should be remembered that the PCI objectives are only measured for airports with paved runways, taxiways, and aprons. Many airports in this classification have only turf or gravel runways. After those four objectives, the highest level of compliance is only 28 percent, for compatibility policies and turnarounds. Only 5 percent of the airports in this classification have up-to-date plans. Compared to the other classifications, more Recreation or Remote Airports lack the data needed to assess performance. The preparation of more Airport Layout Plans would provide more data for performance assessment. More of these airports are privately owned than in other classifications, which is probably a significant reason for the incompleteness of data for assessing performance and for performance objective deficiencies.

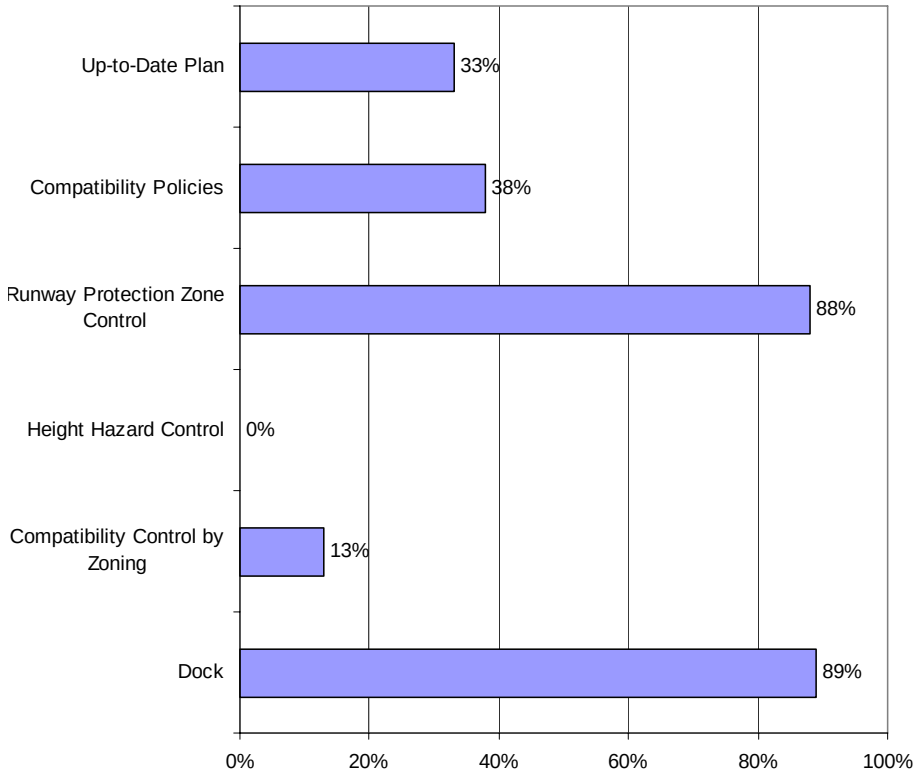
Figure 46: Recreation or Remote Airports Performance Assessment



Seaplane Bases Performance Assessment

Seaplane Bases is the smallest classification, with only nine airports. The all-classification performance objectives were modified to be relevant to Seaplane Bases by eliminating objectives relevant only to land-based airports. Compliance is low except for control of the RPZs, which is probably because most of the RPZs do not extend onto land. None of the Seaplane Bases reported appropriate airport zoning, which may be appropriate because water is generally not zoned. The Seaplane Bases also did not report height hazard controls for their facilities. Only one facility objective is measured, whether or not the facility has a dock to facilitate passenger loading and unloading. Eighty-nine percent of the Seaplane Bases have a dock facility.

Figure 47: Seaplane Bases Performance Assessment



How Might Individual Airport Roles Change Based on Forecast Demand?

As population and aviation activity grows in the future, it may become necessary to change the classification of certain airports in order to provide higher service levels for more aircraft.

The airport classification and performance objectives presented in the Phase II report address existing conditions. As population and aviation activity grows in the future, it may become necessary to change the classification of certain airports in order to provide higher service levels for more aircraft.

The triggers for changing classification are:

- At least 2,500 annual scheduled passenger boardings for three consecutive years would qualify an airport to be reclassified as a Commercial Service Airport. On the other hand, if a Commercial Service Airport has fewer than 2,500 annual scheduled passenger boards for three consecutive years, it should be reclassified.

- If an airport is designated a NPIAS Reliever in the future, it should be reclassified as a Regional Service Airport.

- If an airport lengthens its runway to at least 4,000 feet or grows to at least 40 based aircraft, if might be considered a Regional Service Airport, depending on population and driving time criteria. Population growth and changes in driving time may also trigger reclassification. Population criteria are 5,000 minimum within 90 minutes and 400,000 maximum within 60 minutes. A new Regional Service Airport should be located farther than 30 minutes from another Regional Service Airport or comparable Commercial Service Airports (those that have a runway at least 4,000 feet long and do not have a designated reliever), unless justified by the maximum population criterion.

- If a Local Service Airport's based aircraft grow to at least 20, it should be reclassified as a Community Service Airport.

- If a Recreation or Remote Airport paves its runway or discontinues its use as a residential airpark, it might qualify to be a Local Service or Community Service Airport. Population growth around a Recreation or Remote Airport might also justify reclassification. Even with these triggers, it will be necessary to assess also whether or not the airport is serving a small to medium-sized community on a year-round basis and is not duplicating service provided by another Local Service or Community Service.

Another way that an airport might change classification would be if it replaces one that cannot feasibly meet its performance objectives, due to cost, environmental concerns, political concerns, or other reason.

Another way that an airport might change classification would be if it replaces one that cannot feasibly meet its performance objectives, due to cost, environmental concerns, political concerns, or other reason. An example would be if Grand Coulee Dam Airport's runway could not be expanded to the 5,000-foot performance objective, an airport with a similar service area, such as Wilbur Municipal, might be designated a Regional Service Airport instead. Another example would be the designation of Ed Carlson Memorial or a new Vancouver area airport as a Regional Service Airport if Kelso-Longview is constrained from meeting the Regional Service Airport objectives or as warranted by population of 400,000 maximum within 60 minutes of another regional service airport.

To account for the potential changes listed above, it is recommended that WSDOT Aviation reevaluate the airport classifications and performance objectives every five years, as the system plan is updated by the state. Five years provides enough time for a history to develop from which to judge changing trends. In addition to periodic review by WSDOT, individual airport sponsors might petition for a change in their airport's classification at any time.

Key Findings

Six classifications identify the roles and service levels of Washington's public-use airports.

- Commercial Service and Regional Service Airports have the largest service areas, in terms of driving time and population. They accommodate high levels of activity and are typically capable of handling high performance aircraft (regional/corporate jets and turboprops).
- Development of a new Northeast Washington Airport near Colville is recommended to achieve the state's goal of providing adequate access to Regional Service Airports. The accessibility goal behind Regional Service Airports is:
    - Nearly every Washington resident should be able to reach a "jet-capable" Regional Service Airport or comparable Commercial Service Airport within 90 minutes.
- All but 1 percent of the state's residents are within 90 minutes of a Regional Service or comparable Commercial Service Airport.
- The Community Service and Local Service Airports serve small- to medium-sized communities. These airports accommodate a fairly wide range of general aviation that is important to the community's economic well-being and quality of life.
- The Recreation or Remote Airports and Seaplane Bases serve narrower scopes of general aviation. They owe their existence to geographic circumstances (e.g., a residential airpark, recreational destination, body of water, or emergency landing area in the mountains).

Performance objectives set targets for each classification to evaluate facilities, services, and other factors important to preserving the airport system.

All classifications have the same performance objectives for operational factors, up-to-date plans, and land use compatibility protection. Airport facility and service performance objectives are tailored to fit the specific roles and service levels of the various classifications:

- The Commercial Service and Regional Service Airports have the same facility and service objectives because of the similarity of baseline needs for commercial passenger jets and corporate jets.

- Performance objectives for Community Service Airports are focused on providing airports able to accommodate air taxi operations, including potential operations in very light jets (VLJ).

- Local Service Airports have facility and service objectives geared to small piston general aviation and visual operations.

- Recreation or Remote Airports and Seaplane Bases have no service objectives and few facility objectives, reflecting the lower level of facilities and services needed at these airports, compared to the other classifications.

How well do Washington's airports perform?

Privately-owned airports generally do not perform as well as publicly-owned airports in all classifications. This is likely because privately-owned airports do not have the same access to public grant funding, nor is the same level of effort undertaken to protect their long-term viability, compared to publicly-owned airports. These airports have a higher risk of converting to other uses then similarly sized airport that are publicly owned. Also, encroachment of incompatible development may inflate property taxes leading to conversation to other uses.

Operational Factors

- Nearly all the Commercial Service and Regional Service airports meet the runway safety area objective, while few of the Local Service and Recreation or Remote airports do.

- Washington's airports with airfield pavements perform well for the pavement condition objectives.

Operational Objectives	**Statewide Compliance**
Standard Runway Safety Area	45%
Runway PCI 75	79%
Taxiway PCI 70	73%
Apron PCI 7-	70%
No obstacles in Threshold Siting Surface	not measured
No obstacles in Obstacle Free Zone	not measured

WSDOT will launch a pilot program in 2009 to survey obstructions, which will provide a means for measuring more airports for the threshold siting surface and OFZ objectives.

Up-to-Date Plan

- Very few Recreation or Remote Airports have up-to-date plans, while nearly all the Regional Service Airports do. The majority of Commercial Service and Community Service Airports have up-to-date plans. One-third of the Seaplane Bases have up-to-date plans.

Up-to-Date Plan	Statewide Compliance
ALP or Master Plan less than 7 years old	53%

Land Use Compatibility Protection

- Compliance with nearly all the land use compatibility objectives is noticeably lower than the previous objectives, indicating the state needs significant improvement in assisting local jurisdictions with meeting the provisions of state law requiring land use compatibility protection around airports. Without land use compatibility protection, the existing capacity and capability of some airports is in jeopardy, as is the ability to expand airport capacity and capability to meet future needs.

Land Use Compatibility Protection	Statewide Compliance
Compatibility policies	35%
Appropriate airport zoning	51%
RPZ control	62%
Height hazard control	53%
Compatibility control by zoning	22%

Compliance with Facility and Service Objectives

- The facility objective with the lowest compliance for all applicable classifications is the instrument approach objective.

Classification and Objective	Compliance
Runway Length	
Commercial Service	81%
Regional Service	68%
Community Service	57%
Local Service	82%
Taxiway	
Commercial Service	100%
Regional Service	95%
Community Service	70%
Local Service	55%
Recreation or Remote	28%
Instrument Approach	
Commercial Service	63%
Regional Service	37%
Community Service	22%
Lighting	
Commercial Service	100%
Regional Service	89%
Community Service	78%
Local Service	94%
Recreation or Remote	26%
Visual Glide Slope Indicators	
Commercial Service	86%
Regional Service	74%
Community Service	61%
Local Service	24%
Weather Reporting	
Commercial Service	88%
Regional Service	84%
Community Service	48%
Dock Facility	
Seaplane Bases	89%
Fuel Sales	
Commercial Service	81%
Regional Service	84%
Community Service	61%
Maintenance Service	
Commercial Service	88%
Regional Service	79%
Community Service	57%